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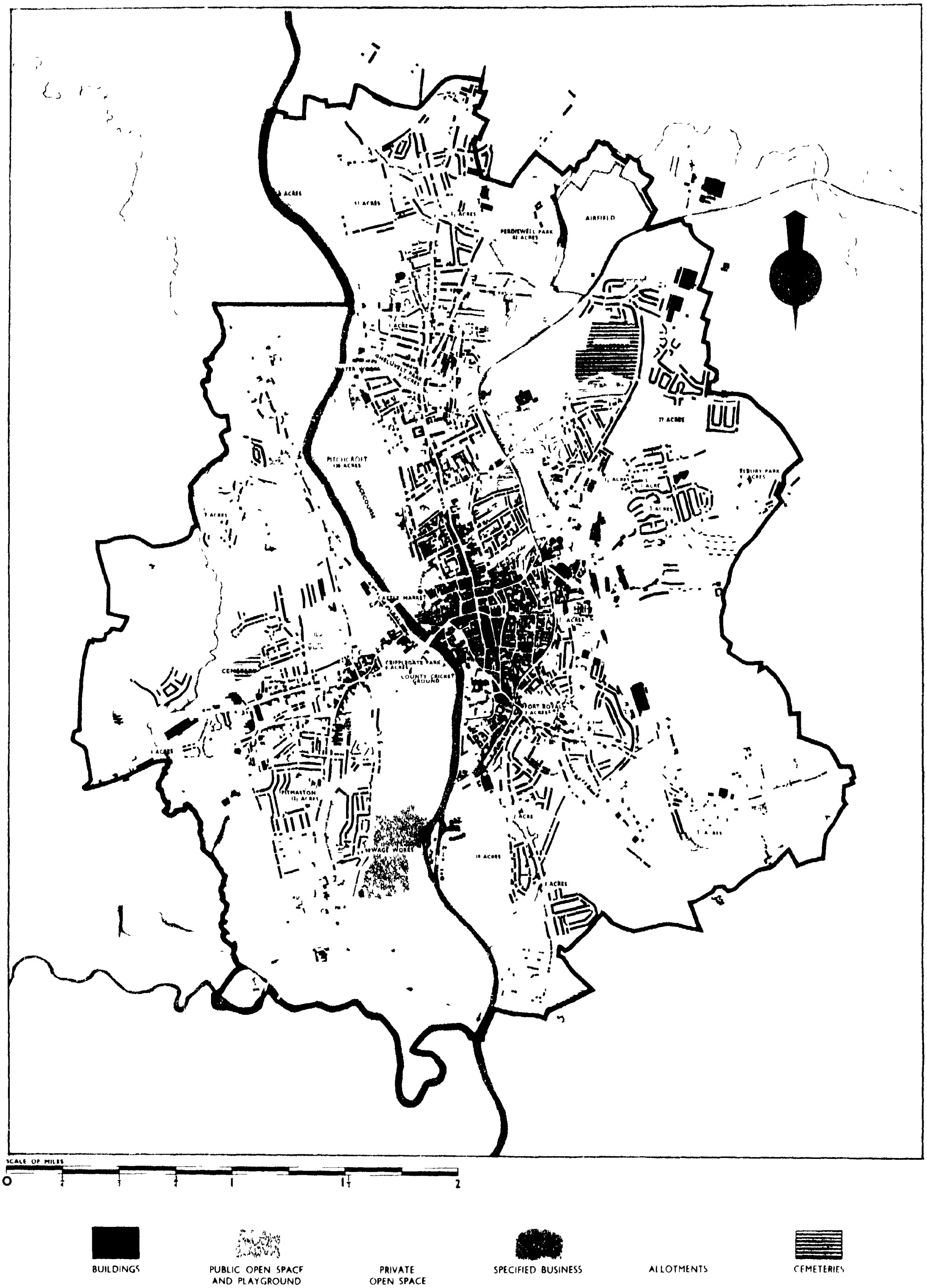

FIG. 1. BUILDINGS AND OPEN SPACES OF VARIOUS TYPES

Compare Fig. 25 which indicates the different uses of land for the different types of building.

COUNTY TOWN

TERMS OF REFERENCE

The terms of reference as agreed upon by the Worcester City Council and the Commerce Department of the University of Birmingham for the Civic Survey were as follows:

'To examine the economic and social structure of Worcester and of those surrounding areas for which it is the transport, marketing, and social services centre.

To make for this purpose an objective analysis of population and employment; of the relative importance of the various industrial and commercial activities; of housing, educational, social, and recreational facilities; and of other similar services and conditions which have to be considered by the Council and their Reconstruction Committee in assessing Worcester's future requirements.

To investigate these problems on a standard factual basis as far as possible, taking note, however, of all relevant local characteristics and needs.

To suggest, as a result, some possible lines of development and to recommend, where appropriate, those that appear to contribute best to the future of the City.'

COUNTY TOWN

A Civic Survey for the Planning of Worcester

by

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P. Sargant Florence

Commerce Department, University of Birmingham

☆

Prepared for the Worcester City Council

1946

JOHN MURRAY, ALBEMARLE ST., LONDON

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AUTHORS' INTRODUCTION

IN November 1943, at the request of its Reconstruction and Development Committee, the Worcester City Council commissioned the Commerce Department of the University of Birmingham to undertake an Economic and Social Survey of the Worcester district to provide the necessary foundation of facts for reconstruction and planning in Worcester. The terms of reference are given on an earlier page (ii). The findings of this 'Civic' Survey, and the recommendations arising therefrom in the light of acknowledged needs (such as health and safety, fuller employment, easier access, and lower social costs generally) were presented in a Report to this Committee of the City Council in May 1945.

County Town incorporates the bulk of the Report. The authors have striven not to lose the local colour and have left the detailed description largely unchanged, adding a street map (Fig. 100), air views (Figs. 50 and 87), and other maps and illustrations to help the general reader not familiar with Worcester. If our survey is to function as a prototype, or pilot inquiry, for planning surveys elsewhere, local detail must clearly not be washed away. The time for generalization will, on most problems, come later when more surveys of this type have been published. An introduction at the head of each chapter (printed in italics) adds a convenient summary of the argument. These 'head-pieces,' where necessary, link up the argument from chapter to chapter, outline the chapter's contents, expound its outstanding technique and findings, and relate the findings to the national problems and policies of today and tomorrow. The practical and detailed recommendations to the City Council arising from the Survey are reproduced from the Report in their entirety and appear at the close of the chapters on Industry, Transport, Linkage of City and Countryside, Housing, Health and Amenity, Retail Distribution, Education, and Zoning and Social Grouping. *Readers wanting a short view of the argument and the practical conclusions to which the Survey points may thus concentrate on the italicized introduction to each chapter and these recommendations.*

A final chapter, entitled 'From Survey to Redevelopment,' includes photographs and drawings. The drawings suggest and illustrate possible developments in consonance with the recommendations asked for by our terms of reference. It is not the purpose of our survey to do more than this. Since the preparation of a town plan has been entrusted to Messrs. Minoprio & Spencely, FF.R.I.B.A., AA.M.T.P.I., these drawings do not specifically include the Worcester 'landscape,' but illustrate principles of general application. It is our hope that the material presented in this Survey will facilitate the task of town-planning. The division of labour pursued at Worcester is a procedure of which cognizance might well be taken elsewhere. Our Civic Survey presents facts and, on the basis of certain objectives that meet social and economic needs, puts forward recommendations. Architects then make use of these facts and recommendations in building up the detailed town plan.

The analysis and methods of the Survey may be applied far beyond the boundaries of Worcester. Worcester is an example of an industrial city set in the midst of a mainly rural county, of which it is the market and administrative centre. It has problems typical of the majority of county towns of England and of many other towns throughout the world, and, in its mixture of industrial and agricultural interests with social amenity, offers advantages in the dispersion of population from congested centres. In conjunction with the West Midland Group's study of the agricultural county of Herefordshire and of the purely industrial Birmingham–Black Country conurbation, this Survey forms part of a trilogy illustrating the rural, the urban, and the mixed rural–urban pattern of life.

* * * *

This book is the result of team work, but the authors feel that the individual contribution made by each member of the team should be set forth. After Chap. I, which was written in full consultation, these contributions can be fairly attributed.

Mr. Tom Brennan dealt mainly with questions of Population, Industry, and Housing, and the results of his work appear in Chaps. III §§ 2–5, IV §§ 1–5 and 7 (*b*), (*c*), and VII § 1 (*a*) to (*d*). He tabulated the information obtained from the house visits and devised the sorting card used for the purpose.

Mr. Walter Ritchie prepared the maps and charts throughout the book and the captions, descriptive text and layout of Chap. XII. Many of the maps were of his own devising, and in Chap. XII all the drawings and many of the photographs are also his work. In earlier chapters (II and V) he contributed to the fundamental plan of the text.

Miss Janet Glaisyer was responsible for the original scheme of the Survey, for the collection of much of the original data, and for the organization of the field work. Her particular contributions were Chaps. III § 1, VI, VII § 1 (*e*) and § 2, VIII § 1, IX, X, and XI §§ 3 and 4.

Professor Florence's particular contributions were Chaps. II, IV §§ 6, 7 (*a*) and 8, V, VIII §§ 2 and 3, XI §§ 1 and 2. Miss Glaisyer and Professor Florence were responsible for the general supervision, co-ordination, and editing of the work.

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In the chapter on transport (V) valuable information was provided by the Birmingham and Midland Omnibus Company (the Midland 'Red'), by the divisional superintendents of the Great Western and London, Midland and Scottish Railway Companies, by the Severn Commissioners, by the Ministry of Transport, and by the Worcester City police.

Statistics on industry (for Chap. IV) were obtained through the generous co-operation of the Ministry of Labour and H.M. Factory Inspectorate. Interviews and answers to questionnaires were most kindly given by individual manufacturers who showed the utmost co-operation. The Trades and Labour Council also gave useful help.

Helpful answers to other questionnaires were given by the Women's Institutes, heads of schools, and the clergy and ministers of religious bodies. Special thanks are due to the Very Rev. the Dean of Worcester. The Chamber of Commerce and the Worcester Co-operative Society assisted in the chapter on retailing. Miss C. M. Grant Glass gave valuable help at the initiation of the Survey on the basis of her local knowledge, and we should like to acknowledge the advice of Mr. Matley Moore, F.S.A., in listing places worthy of preservation.

Thanks are due to those who helped the authors in assembling the material. L. J. Wills, Professor of Geology in the University of Birmingham, gave valuable advice for Chap. II, and the West Midland Group for Post-War Reconstruction and Planning provided classified data on housing.

The house-to-house visits were in the main supervised by Mrs. Barbara Lewis, B.A. (now tutor in Social Study, University of Birmingham). These visits were carried out by Mrs. Lewis herself, Miss M. L. Foster, Miss Gwen Batstone, Miss Joyce Sellicks, B.A., Miss Marjorie Wilson, and Mrs. Winifred Savery.

The authors are particularly indebted to Mrs. Winifred Savery for her enthusiasm and competence in giving secretarial help during the final

stages of the survey. They wish to thank Miss Cynthia Ford, M.Com., for her compilation of the index.

We give acknowledgment for the following photographs appearing as figures in Chap. XII.

44 to T. R. E., Malvern. 51, 52, and 53 to Dilys Pinion. 55 to the Editors, *Modern Transport*. 65 to Hill, Evans & Co. 66 to Mr. Dyson Perrins and Norman Mays studio. 67 to Mining Engineering Co. 68 to Editor of the *Evening News and Times*. 69 to Messrs. Heenan & Froude.

Mr. Hodson, of Messrs. Horniblow, Worcester, deserves special acknowledgment for photographs (Figs. 42, 45–9, 58–64, 70, 71, 95, and 97). Fig. 72 is a montage using a photograph by Mr. Hodson. Figs. 50 and 87 are extracts from the Aerial Survey of Worcester made by Messrs. Aerofilms in 1938. These have been rephotographed by Mr. Hodson and are reproduced by courtesy of Worcester Corporation.

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Publication was only possible through the generous offer of guarantees against financial loss, primarily by the Worcester Corporation but also by Mr. James Archdale, Mr. C. W. Dyson Perrins, Mr. Herbert Simon, Miss Helen M. Wilson, Dr. E. H. Wilkins, and the Bournville Village Trust. We should like to thank Mr. John Madge, M.A., A.R.I.B.A., University of Bristol, for many useful suggestions in reading page proofs, and finally to place on record our appreciation of the efficient co-operation of The Kynoch Press in the course of producing this book.

CHAPTER I

SCOPE OF SURVEY

The purpose of this Civic Survey was to provide comprehensive data upon which an integrated plan could be built for the redevelopment of Worcester. As a County Town, the city has close relations with the surrounding countryside and it was essential at the outset to decide upon the basic area of Worcester's influence.

A preliminary to any regional planning which is to form part of a national scheme is to find objective tests for defining the extent of each region. Each region should, as far as possible, be distinctive in its characteristics. This chapter, it is hoped, makes a concrete contribution to the preliminary task of defining planning regions. The objective tests that are used in evidence to differentiate between fairly distinctive areas or regions within Worcestershire are physical features, population density and relative growths in population, the gravitation of traffic, and economic make-up or structure. Figs. 2–6 provide the basic maps.

Out of the mass of evidence, three areas can be distinguished within the county boundary, each with its own peculiar characteristics and problems. One of these areas is under the influence of—and influences—the City, forming with Worcester itself a convenient unit for planning purposes. It is not possible to obtain information from different sources always for one and the same area, especially if that information is statistical and the area seeps over county boundaries. But though the precise limits of the area surveyed for different purposes must vary, it should be constantly borne in mind that Worcester has an important function in serving a wide area round it, and that the City cannot be surveyed in isolation from that area.

§1. POPULATION AND ADMINISTRATIVE AREAS OF WORCESTERSHIRE

Of the 1931 population, as shown in Table I, 26·5% lived in County Boroughs and 51·7% in Municipal Boroughs and Urban Districts, making a total of 78·2% in urban Administrative Areas. This total is concentrated in 15·3% of the acreage of the area. But these urban areas are not evenly distributed over the county. About half the urban population of 328,000 lived in a compact, continuous area of 16,828 acres containing Dudley (59,583), Halesowen (30,350), Oldbury (36,642), and Stourbridge (33,140). Of the remaining urban population about one-third (51,686) lived in Worcester City and the remaining two-thirds (115,000) were distributed among eight smaller areas. The distribution of population among all the administrative units of Worcestershire is set out in Table I where population figures for 1931 and 1921 are compared. Acreage and population figures have been adjusted to existing boundaries. These boundaries are marked out in Fig. 3.

§2. EVIDENCE OF DISTINCTIVE AREAS WITHIN WORCESTERSHIRE

It is possible, by applying certain tests, to divide the county into areas, each with its own characteristic economy and settlement pattern, and each with different problems.

Test 1. *Physical Features.* Concentrating attention on the main physical features of the county it is possible to distinguish three areas. These are the two hilly districts of the north-east and of the north-west, and a central and southern plain. It is clear from Fig. 6 (page 15) that the north-east is divided from the rest of the county by its physical features; the north-west plateau appears to be more closely connected to the rest of the county by the valleys of the Teme and Severn. However, these valleys are narrower and steeper than those in the central plain and promote a different type of vegetation and agricultural economy, so that they can be differentiated from the Lower Teme and the Lower Severn.

Test 2. *Continuity of Population Density.* Fig. 4 shows that the most densely populated parts of the county are the Black Country fringe and Worcester City.* The area of high population density in the Black Country includes Dudley, Stourbridge, Oldbury, and Halesowen, the density being almost continuous. South of Halesowen and Stourbridge, however, areas of fairly low population density divide this area from the rest of the county. The next belt of moderately high population density can be drawn to include the areas of Kidderminster and Stourport, Bromsgrove and Redditch. Here the three main centres of population are not so closely knit

---

* Names appear in Figs. 3 and 5.

TABLE I

ADMINISTRATIVE AREAS OF WORCESTERSHIRE

Acreage and populations for 1921 and 1931 according to present boundaries

	ACREAGE	CENSUS POPULATIONS	
	No. of acres	1921 No. of persons	1931 No. of persons
Administrative County with associated County Boroughs	447,678	397,910	420,056
County Boroughs			
Dudley	4,063	56,098	59,583
Worcester	5,394	49,700	51,686
Total	9,457	105,798	111,269
% of County ..	2·1%	26·6%	26·5%
Municipal Boroughs and Urban Districts			
Bewdley	3,681	4,053	4,279
Bromsgrove	9,228	18,532	21,465
Droitwich	1,735	4,791	4,764
Evesham	3,958	10,167	10,605
Halesowen	5,247	27,670	30,350
Kidderminster	4,694	27,699	29,521
Malvern	7,400	18,852	16,665
Oldbury	3,304	31,252	36,642
Redditch	12,059	22,102	22,207
Stourbridge	4,214	30,542	33,140
Stourport	3,204	6,155	7,340
Total	58,724	201,815	216,978
% of County ..	13·2%	50·7%	51·7%
Rural Districts			
Bromsgrove	45,646	14,406	17,031
Droitwich	51,380	11,206	10,338
Evesham	52,872	13,688	14,106
Kidderminster	36,769	7,726	7,904
Martley	52,838	10,519	10,664
Pershore	57,801	14,034	13,780
Tenbury	31,244	5,853	5,388
Upton-on-Severn	50,947	12,865	12,598
Total	379,497	90,297	91,809
% of County ..	84·7%	22·7%	21·8%
TOTALS	447,678	397,910	420,056
% of County ..	100%	100%	100%

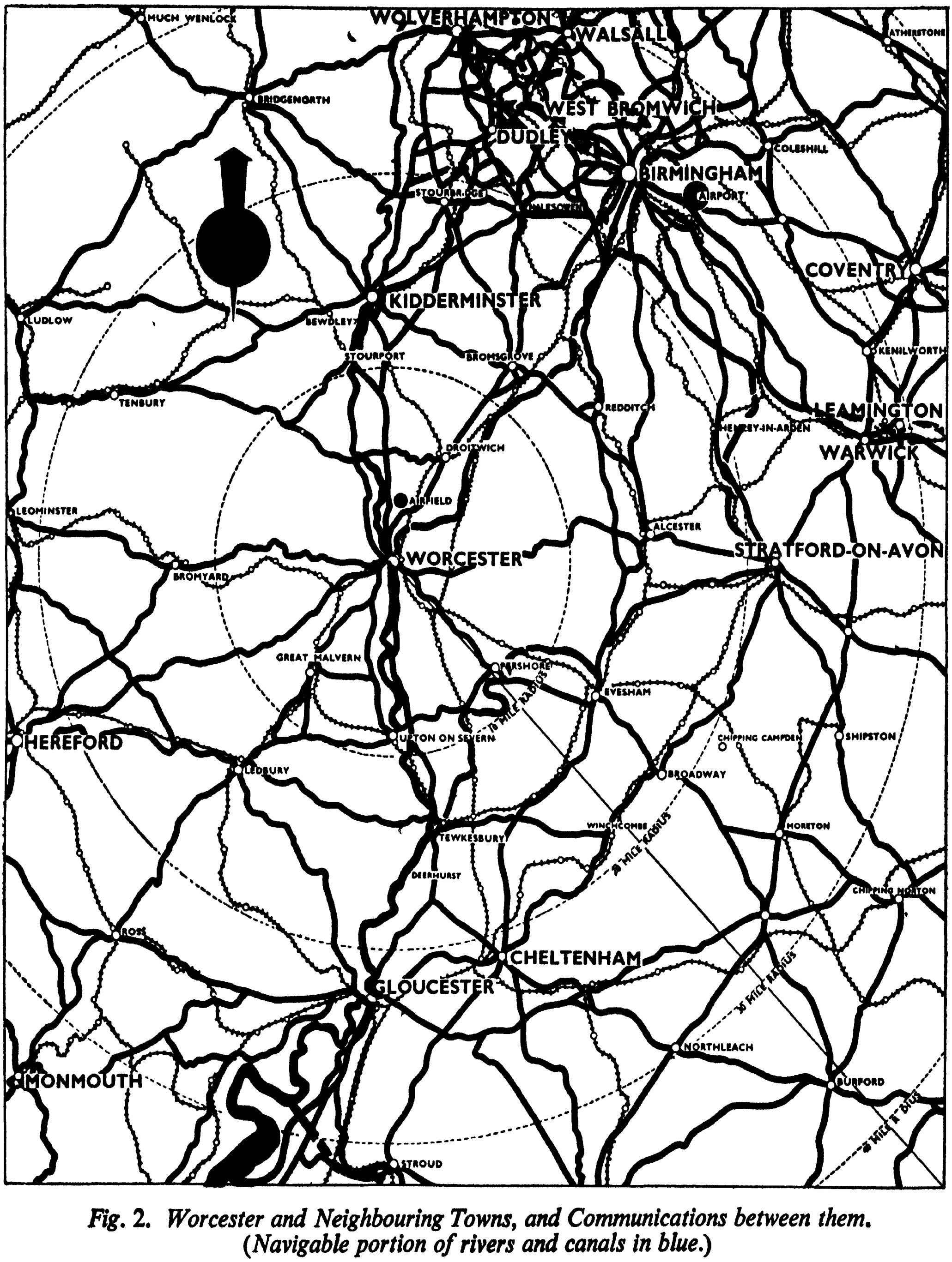


Fig. 2. Worcester and Neighbouring Towns, and Communications between them. (Navigable portion of rivers and canals in blue.)

together, but they are divided from the rest of the county to the south and west by a belt of very sparsely populated territory, broken only where it crosses the main Bromsgrove-Worcester road. In this rest of the county, Worcester City, with the areas immediately surrounding it, is the main centre of population, with a belt of fairly high population density extending almost to Malvern and Pershore. To the south-east of the county, however, there is a band of less densely populated country before reaching an island centre of population formed by Evesham and the concentrated market-gardening districts of that region. The 1931 population densities are shown on Fig. 4 on a parish basis.

Test 3. *Gravitation of Traffic.* An examination of road connections alone, given in Fig. 2 irrespective of the volume of traffic carried, indicates a complicated pattern of roads in the northern part of the county, and south of this three towns, namely Worcester, Kidderminster and Bromsgrove as the main centres of a widespread network of roads. Stourport lies within the system of roads round Kidderminster, while Halesowen and Stourbridge are similarly connected with the close network of the Black Country, including Dudley and Oldbury.

Fig. 14 (page 94) showing the total volume of all types of traffic in 1938 along main (Ministry of Transport, Class A) roads also demonstrates a clear connection between Birmingham and the area north-east of the line Kidderminster-Bromsgrove-Redditch. South of this line the region which Worcester commands as the focal point for road traffic (goods and passenger combined) covers a wide area. The extent of this area is indicated by a thick boundary line in Fig. 5 (page 11). With the exception of Evesham, it covers most of southern Worcestershire and also includes certain districts of Herefordshire.

The figures of rail passenger traffic supply information similar to road traffic regarding the relative importance of various towns as communication centres.* For example, figures of passenger travel between certain stations and Birmingham have been compared with those showing travel between the same stations and Worcester, and they indicate that (1) whereas Bewdley, Kidderminster and Bromsgrove have a connection with Birmingham rather than with Worcester, Droitwich has considerably stronger ties with Worcester; (2) travel from Stourport, both to Birmingham and to Worcester, is only small; (3) the main rail travel into Worcester is from the south-west and west (Malvern and Herefordshire) and to a smaller extent from Evesham and Droitwich.

§3. THE THREE DIFFERENT AREAS AND THEIR POPULATION

THE three considerations of physical features, population densities and the gravitation of traffic all show that the county can be divided into three main areas, each with different characteristics. Those three areas are shown in Fig. 5 and their boundaries are specially drawn to coincide with

---

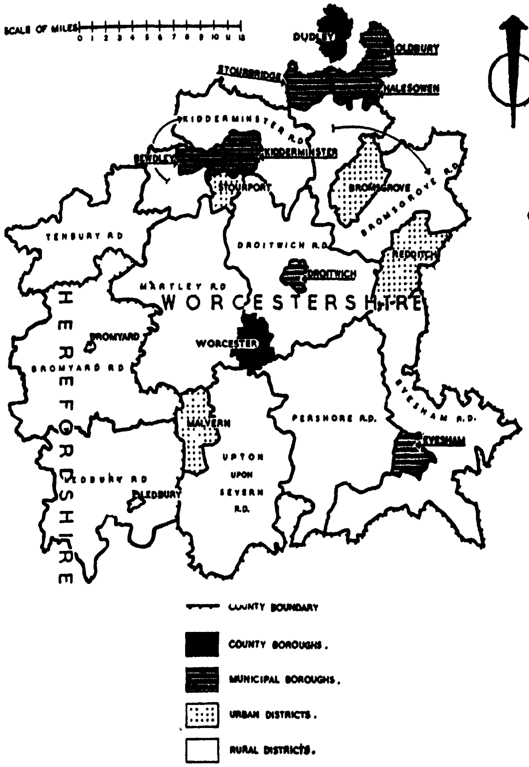
* See also Ch. V.

TABLE II

POPULATIONS AND DENSITIES PER ACRE IN 1931 AND POPULATION CHANGES 1921–31 WITHIN AREAS I, II AND III SHOWN IN FIG. 5

(Figures in this table have been adjusted to existing boundaries of Administrative Areas shown in Fig. 3. Populations are those enumerated by the Censuses)

Administrative Areas		Acreage			Population 1931				Population Changes 1921–1931					
									Net increases			Net decreases		
		No. of acres		% of county	No. of persons		% of county	Persons per acre	No. of persons		%	No. of persons		%
Total Administrative County with associated County Boroughs		447,678		100·0	420,056		100·0	0·9	22,146		5·6	—		—
AREA I	(a) Dudley C.B.	4,063		0·9	59,583		14·2	14·7	3,485		6·2	—	—	—
	(b) M.B.s and U.D.s	12,765		2·8	100,132		23·9	7·8	10,668		11·8	—	—	—
	Halesowen		5,247	1·2		30,350	7·3	5·8		2,680	9·7	—	—	—
	Oldbury		3,304	0·7		36,642	8·7	11·1		5,390	17·2	—	—	—
	Stourbridge		4,214	0·9		33,140	7·9	7·9		2,598	8·5	—	—	—
	Totals (I)	16,828		3·7	159,715		38·1	9·5	14,153		9·7	—	—	—
AREA II	(a) M.B.s and U.D.s	32,866		7·4	84,812		20·2	2·6	6,271		8·0	—	—	—
	Bewdley		3,681	0·8		4,279	1·0	1·1		226	5·8	—	—	—
	Bromsgrove		9,228	2·1		21,465	5·1	2·0		2,933	15·8	—	—	—
	Kidderminster		4,694	1·0		29,521	7·0	6·3		1,822	6·6	—	—	—
	Redditch		12,059	2·8		22,207	5·3	1·8		105	0·5	—	—	—
	Stourport		3,204	0·7		7,340	1·8	2·3		1,185	19·3	—	—	—
	(b) R.D.s	113,659		25·3	30,323		7·3	0·3	2,338		8·4	—	—	—
	Bromsgrove		45,646	10·2		17,031	4·1	0·4		2,625	18·2	—	—	—
	Kidderminster		36,769	8·2		7,904	1·9	0·2		178	2·3	—	—	—
	Tenbury		31,244	6·9		5,388	1·3	0·2		—	—	—	465	8·0
	Totals (II)	146,525		32·7	115,135		27·5	0·8	8,609		8·1	—	—	—
AREA III	(a) Worcester C.B.	5,394		1·2	51,686		12·3	9·6	1,986		4·0	—	—	—
	(b) M.B.s and U.D.s	13,093		3·0	32,034		7·6	2·5	—		—	1,776	—	5·3
	Droitwich		1,735	0·4		4,764	1·1	2·7		—	—	—	27	0·6
	Evesham		3,958	0·9		10,605	2·5	2·7		438	4·4	—	—	—
	Malvern		7,400	1·7		16,665	4·0	2·3	—	—	—	—	2,187	11·6
	(c) R.D.s	265,838		59·4	61,486		14·5	0·2	—	—	—	826	—	1·3
	Droitwich		51,380	11·5		10,338	2·4	0·2		—	—	—	868	7·8
	Evesham		52,872	11·8		14,106	3·3	0·3		418	3·0	—	—	—
	Martley		52,838	11·8		10,664	2·5	0·2		145	1·4	—	—	—
	Pershore		57,801	12·9		13,780	3·3	0·2		—	—	—	254	1·8
	Upton-on-Severn		50,947	11·4		12,598	3·0	0·2		—	—	—	267	2·1
	Totals (III)	284,325		63·6	145,206		34·4	0·5	210	—	0·1	—	—	—



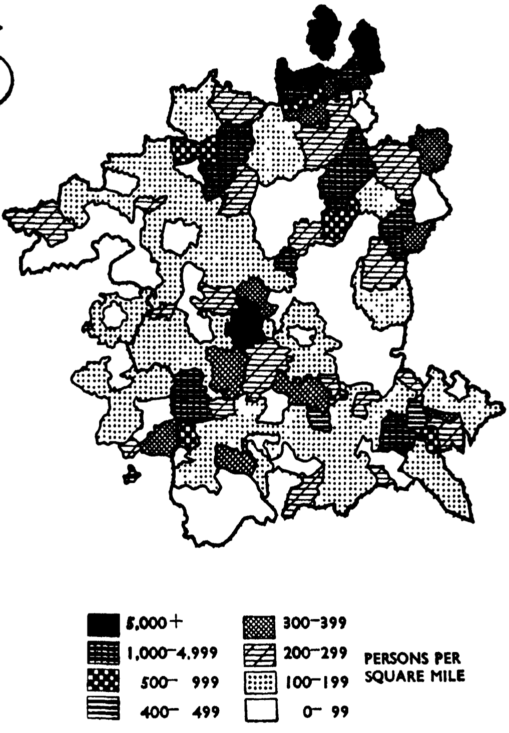


Fig. 3. *Local Government Administrative Areas.* *Fig.* 4. *Population Densities.*
Worcestershire and adjacent districts.

the boundaries of Local Government areas, as this is essential for the collection of certain statistical data.

The population figures for the three areas are compared in Table II. The differences in the size of the Areas is obvious from Fig. 5. While the total population of each of the three Areas is roughly the same, Area III with Worcester as its centre is twice the size of Area II (Kidderminster and Redditch) and seventeen times that of Area I (Black Country). Not only does the density of population vary greatly between these Areas, but the change of population since 1921 is different in each case. In each Administrative Area within Area I there was a net increase in population, in the period 1921–31. The average growth for this Area was 9·7 % as against 5·6 % for the county and 5·5 % for the whole of England and Wales. The corresponding growth for Area II was 8·1 % and the increase was particularly marked in the case of Bromsgrove and Stourport. The 1931 Census figures show that for both areas these changes were due mainly to immigration into the district rather than to natural increases. One district, Tenbury, showed a net decrease in population of 8·0 %. This was due to a loss by emigration of about 11 % which more than discounted the natural increase, a phenomenon repeated in other rural areas of the county. The Area (III) of which Worcester is the centre, had a decline in population

TABLE III
INDUSTRIAL STRUCTURE OF WORCESTERSHIRE, 1931

Numbers refer only approximately to Areas I, II and III, as shown in Fig. 5 as no adjustments have been made in population and employment figures to allow for changes in boundaries since 1931		AREA I *County Boroughs:* DUDLEY *Municipal Boroughs and Urban Districts:* HALESOWEN, OLDBURY, STOURBRIDGE			AREA II *Municipal Boroughs and Urban Districts:* BEWDLEY, BROMSGROVE, KIDDERMINSTER, REDDITCH, STOURPORT *Rural Districts:* BROMSGROVE, KIDDERMINSTER, TENBURY			AREA III *County Boroughs:* WORCESTER *Municipal Boroughs and Urban Districts:* DROITWICH, EVESHAM, MALVERN *Rural Districts:* DROITWICH, EVESHAM, MARTLEY, PERSHORE, UPTON-ON-SEVERN			
Industry Code No.	Industrial Classification	* Numbers employed	% of total in industry AREA I	† Location quotient	* Numbers employed	% of total in industry AREA II	† Location quotient	* Numbers employed	% of total in industry AREA III	† Location quotient	Industry Code No.
	ALL INDUSTRIES (excluding Out-of-Work)	65,023	100·0	—	51,578	100·0	—	64,093	100·0	—	—
I	AGRICULTURE AND FISHING	471	0·72	0·12	4,265	8·27	1·38	12,417	19·37	3·23	I
II	MINING AND MANUFACTURING‡										II
1	Mining (and treatment of non-metalliferous products)	1,678	2·58	0·49	465	0·90	0·15	709	1·10	0·19	1
2	Bricks, pottery, glass	2,878	4·43	4·05	784	1·52	1·38	652	1·02	0·93	2
3	Chemicals and allied trades	1,208	1·86	1·62	109	0·21	0·18	60	0·09	0·08	3
4, 5, 6	Metals and engineering	26,698	41·05	3·58	11,383	22·07	2·10	5,680	8·87	0·84	4, 5, 6
7	Textiles	510	0·78	0·14	9,028	17·52	3·02	590	0·92	0·16	7
8	Clothing	2,792	4·30	0·93	955	1·85	0·40	3,492	5·45	1·17	8
9	Food, drink, tobacco	1,914	2·95	0·88	1,138	2·21	0·66	2,007	3·14	0·94	9
10	Woodworking, furniture, etc.	527	0·81	0·57	286	0·56	0·40	686	1·04	0·74	10
11	Paper, stationery, printing	735	1·13	0·44	577	1·12	0·44	763	1·20	0·48	11
12	Miscellaneous (including leather industries)	1,210	1·86	1·0	1,450	2·81	1·78	766	1·20	0·67	12
	Total (II)	40,150	61·75	1·61	26,175	50·77	1·33	15,405	24·03	0·63	—
III	SERVICE INDUSTRIES§										III
1	Building and contracting	3,233	4·98	0·98	2,345	4·55	0·90	2,886	4·50	0·89	1
2	Gas, water, electricity	982	1·51	1·25	838	1·62	1·30	714	1·11	0·89	2
3	Transport and communication	3,144	4·84	0·70	1,873	3·63	0·53	3,641	5·68	0·84	3
4	Commerce and finance	8,094	12·42	0·75	5,523	10·72	0·64	9,277	14·48	0·87	4
5	Public administration	3,498	5·38	0·65	2,978	5·78	0·70	4,942	7·71	0·93	5
6	Professions	1,096	1·69	0·50	1,247	2·41	0·71	2,728	4·26	1·25	6
7	Entertainment and sport	319	0·49	0·54	252	0·48	0·53	393	0·61	0·68	7
8	Personal (including hotels and catering) ..	4,036	6·22	0·46	6,082	11·77	0·93	11,690	18·25	1·35	8
	Total (III)	24,402	37·53	0·67	21,138	40·96	0·73	36,271	56·60	1·15	—

* Figures exclude persons out of work. † See footnote, p. 10. The industrial structure for England and Wales is given in Table I, Ch. IV.
‡ Grouped as in Table II, Ch. IV. § Based on the order of groupings in the Population Census.

in five districts out of nine. As a whole it showed the smallest increase of the three Areas during the period 1921–31. The decline in population in parts of Area III is significant. The chances of any one area attracting additional population will be small in the event of a national decline; but for any area already losing both absolutely and relatively to the rest of the country, the decline will be particularly marked, unless measures are taken to establish industries or to make agriculture more prosperous and attractive. The details of population movements affecting this area will be examined in a later chapter.

Evesham was the only Rural District in South Worcestershire (see page 28) to gain by immigration of population. This may well be due to the increasing demand for the fruit and vegetables specially grown in the area and their efficient marketing, to the advanced housing policy of the local authority and to the predominance of the smallholder in this district. The economic characteristics of the Evesham district should be particularly noted, as they distinguish it from those districts of Area III which look to Worcester as their main centre for marketing, trade and social facilities in general.

§4. DIFFERENTIATION OF INDUSTRY IN THE THREE AREAS

THE industrial structure of the three Areas is compared in Table III. The standard groupings of industries that are used are shown in detail in Table II of Chap. IV. Agriculture is relatively unimportant in Areas I and II and predominates in Area III. Not only is the proportion of the labour force employed in agriculture different in each Area, but, as would be expected from the different physical features of each Area, the type of agriculture also varies.

What little agriculture there is in the Black Country is mainly concerned with dairying and sheep on rough grassland, though some arable farming occurs on the lighter sandstone soils.

The type of agriculture in Area II is very varied. Around Bromsgrove and near Kidderminster there is much market-gardening, both in specialized smallholdings and on large arable farms. There is also some fruit-growing including small fruit, apples and plums. Agricultural labour density is high. In the Upper Teme Valley there is much arable farming with hops and fruit, particularly cherries and plums. The labour density in this district is fairly high but is very low farther west around Tenbury where, as noted earlier, there has been an exodus of population.

Area III (of which Worcester is the centre) is the only area in which agriculture is the biggest of the industrial groups on Table III, measured by the numbers employed. It includes the three market-gardening areas, namely the Severn Valley north and south of the City and the Avon

Valley, where much of the agricultural population is concentrated. Areas I and II, it is true, include market-gardening, arable farming and dairying among many other activities, but the Avon Valley in Area III—the famous Vale of Evesham—is given over almost entirely to market-gardening and fruit-growing. The types of holding in this area are either small family holdings, under ten acres, or large ones up to 1,000 acres worked by regular and casual labour on piece rates. The region is well served for agricultural marketing with railways; both the G.W.R. and L.M.S.R. provide special facilities for collecting and handling fruit and vegetables, which are mainly marketed in the north.

In mining and manufacturing industries the structure of the three Areas shows similar differences. The industrial development of Area I (the Black Country) originally rested upon its wealth of natural resources. There was ironstone, clay for lining the furnaces, and timber for smelting. Later, when it became possible to use coal instead of charcoal for smelting, the district had access to the thickest seam of coal in the country. By the time the mines were becoming worked out, or less productive, and steel was replacing iron, the district had adapted itself to other industries, engineering and chemicals. Mining and the first three groups of manufactures given in Table III make up the bulk of the employment in this area. Each of these three groups is concentrated in relation to the industrial make-up of England and Wales. This concentration is particularly noticeable for the groups 'bricks, pottery and glass' and 'metals and engineering' with location quotients of 4·05 and 3·58.* Heavy industries are involved; a larger proportion of the total occupied is male than in the rest of the county, and there is more cyclical unemployment.

The main industries of Area II are represented under the groups 'textiles' and 'metals and engineering' which account for about four-fifths of the population employed in 'mining and manufacturing.' The employment in these two groups is concentrated in carpet manufacturing at Kidderminster (which for the purpose of Table III is classified under 'textiles') and in making lighter metal products, mainly needles, at Redditch. This Area employs a larger proportion of women than either Area I or III. The high proportion of workers employed in the professions and personal services compared with Area I reflects the residential character of Bromsgrove and the overspill from the industrial districts.

In the area of which Worcester is the centre (Area III) the dominating industry is agriculture. Next in importance come metals and engineering, employing about 5,600 in 1931, and clothing with about 3,500 workers.

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* The location quotient for any industry is found by dividing the percentage of total employed population which the industry forms locally by the corresponding national percentage. Thus in Table III, Area III employs 19·37% of its employed population in agriculture as against England and Wales' 6·0% (see Table I, Ch. IV); therefore Area III's agricultural location quotient is 19·37 divided by 6·0, i.e. 3·23.

Both groups of industries are concentrated in the City of Worcester, a large proportion of the clothing industry being represented by the City's well-known glovemaking. This area employs a larger proportion of its working population in 'service' industries than do the other two, thus showing the City's function as a marketing and advice centre for its surrounding agricultural area.

The health resorts of Malvern and Droitwich, one on each side of Worcester, lend an added distinction to Area III and, in the light of a policy of holidays with pay, and comprehensive medical rehabilitation service, they will come into greater prominence.

The City is also readily accessible to the fine scenery of Bredon and the Cotswolds round Broadway (both included in Area III) and to boating facilities on the Severn and the Avon.

§ 5. THE 'AREA OF WORCESTER'S INFLUENCE'

THE physical features of the County, the scatter of population, and the direction and volume of traffic thus appear to divide it into three distinct Areas. Submitted to further tests, consisting of population trends and industrial differentiation, applied in § 3 and § 4, these three Areas show sufficient differences to merit separate examination for planning purposes.

The boundaries of these three Areas had, however, to be drawn (for purposes of statistical calculation) to coincide with local government Administrative Areas and they are not necessarily the most suitable to use in the selection of an area for survey. For the survey of facts relative to Worcester City, where statistics have been used for estimates of future population, and in the first section of the Industrial survey (Chap. IV) Area III has been taken as a whole. But, as the preliminary examination has already shown, the districts which should be included in the 'area of Worcester's influence' are not quite coincident

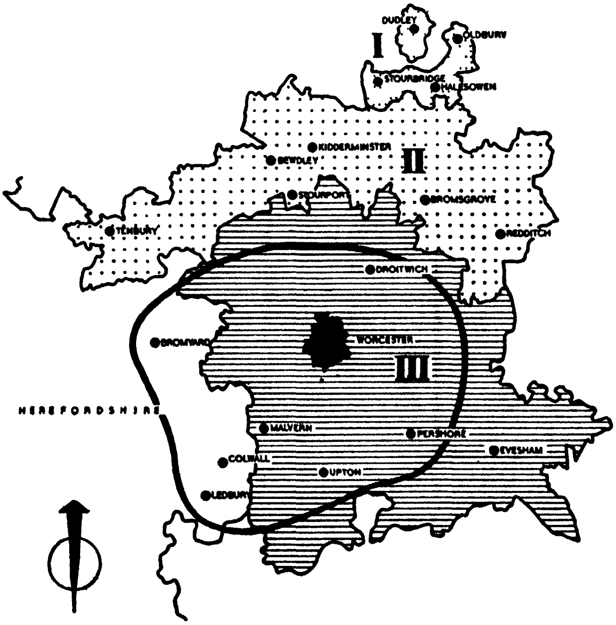

Fig. 5. The Three Distinctive Areas of Worcestershire. The general area of influence of Worcester City is enclosed in a thick line.

with Area III. Transport figures, the most indicative evidence of the extent of dependence of surrounding areas upon Worcester, show that, with the exception of the Evesham district, Worcester acts as the focal point of travel within an area extending over the greater part of Area III and certain parts of east Herefordshire. This fact has already been noticed when considering the gravitation of road traffic in § 2; and in Chap. VI where more detailed analyses are undertaken, both of the type of transport service and the extent of travel from the surrounding districts, it is strongly confirmed.

In later chapters, the extent of Worcester's influence on surrounding districts is also examined in connection with marketing and other trading and professional services, health, education, social services generally, and in connection with its attractions as a centre for entertainment and recreation. For each of these purposes, the extent of interdependence is not exactly the same. For some purposes, the Tenbury sub-area of Area II might for instance be included with Area III of Worcestershire. The area we have defined as the 'area of Worcester's influence,' bounded by the thick line in Fig. 5 is that arrived at after taking all evidence into consideration.

Except where approximate statistical calculation (as provided within the administrative divisions of Area III) is sufficient, it is this area—shown in Fig. 5—that will be surveyed as the 'area of Worcester's influence.' It will be considered only in so far as it might affect, or be affected by, changes and developments in Worcester City on which the primary and most detailed study will be concentrated.

CHAPTER II

THE PHYSICAL BASIS

Climate, configuration and character of the earth's surface are dominant factors affecting the form of population settlement and building sites, health, land use, industrial location, lines of transport and position of bridges, water resources, even recreational activity; and this chapter briefly describes the physical conditions of the area of survey as a basis for later chapters.

The geographical natural region of which Worcester is the centre does not entirely coincide with the area of the City's influence outlined in the last chapter. Where the two differ, the variations are due mainly to economic and technical progress particularly in communication. Fig. 6 *shows Worcester in its regional physical setting and includes the area of its influence. The natural area is at once evident from the map—an undulating plain partially framed by hills and rising ground and drained by the river Severn and its tributaries. The Severn though an important means of communication in itself, is also a serious barrier dividing the area roughly in half. The position is aggravated by flooding (see Fig.* 49) *and by the lack of bridges. Only three bridges serve a river length of some twenty miles—Holt Fleet to the north, Worcester in the centre and Upton to the south. But the City is the natural focal point integrating the two halves of the area and has developed on both sides of the Severn, where there are flat expanses of land well above the level of floods.*

The underlying physical factors may be considered under two heads, geology and climate. Both have a practical outcome in the planning of Worcester and its area.

§ 1. GEOLOGY

THE geological structure of the natural Worcester area is extremely simple, and explains the physical features shown in Fig. 6, and in some of the photographs (Figs. 43–7 in Chap. XII). Within a frame of much older rocks (Palaeozoic and Pre-Cambrian) which extends through the Malvern and Abberley Hills to the northward on the west, and from the South Staffordshire Coalfield to the Lickey Hills on the north-east, lies a very flat-bottomed basin of nearly horizontal Mesozoic rocks. The Worcester plain is underlain by the red Keuper sandstones and Keuper marls of Triassic age; and these in turn pass eastwards under the grey clays and thin limestones of the Lias.

The vales of Severn and Avon have mainly been carved out of the red Keuper marls and grey Lias clays, but north of Worcester the Triassic sandstones appear over wide areas, outcropping in a broad curve around the northern end of the basin. In the process of valley development a surface not very different from the present was produced by erosion, and on this surface lie considerable spreads of unconsolidated sands, gravels and alluvial silts, particularly along the floors of the principal valleys. These river deposits provide light water-bearing soils that are completely different from the heavy clays and marls on which they rest. In the absence of these drifts, the heavier clays and marls determine the soil type and affect the water supply.

The development pattern of the City illustrates what has just been said. The main part lies on the superficial deposits (usually referred to as 'drift'), but the higher ground to the east is bare Keuper marl. The occurrence of high ground, with poor natural water supply, for long limited expansion in this direction; and even now that a piped water supply is provided, the water pressure is adversely affected by the elevation, and industrial expansion is thus discouraged. The Keuper marl is known to be as much as 1,327 ft. thick at Upton-on-Severn and 702 ft. thick at Malvern Link. Probably less thick under Worcester, it nevertheless is a massive substratum of impervious material from which only small quantities of highly mineralized water can be obtained. In contrast, the drift deposits are easily cultivated and also yield good water (when unpolluted) and, until the institution of piped supplies, this water-bearing property was an important factor in localizing settlement on the outcrops near the river but above the flood level. In fact, it seems likely that the growth of the City eastwards was inhibited by the disappearance of the drift and the emergence of the Keuper marl.

Between the City and St. John's runs the flood plain which has had a dominating influence on the growth of the town. The alluvial deposits themselves, quite apart from the liability to flooding, offer certain

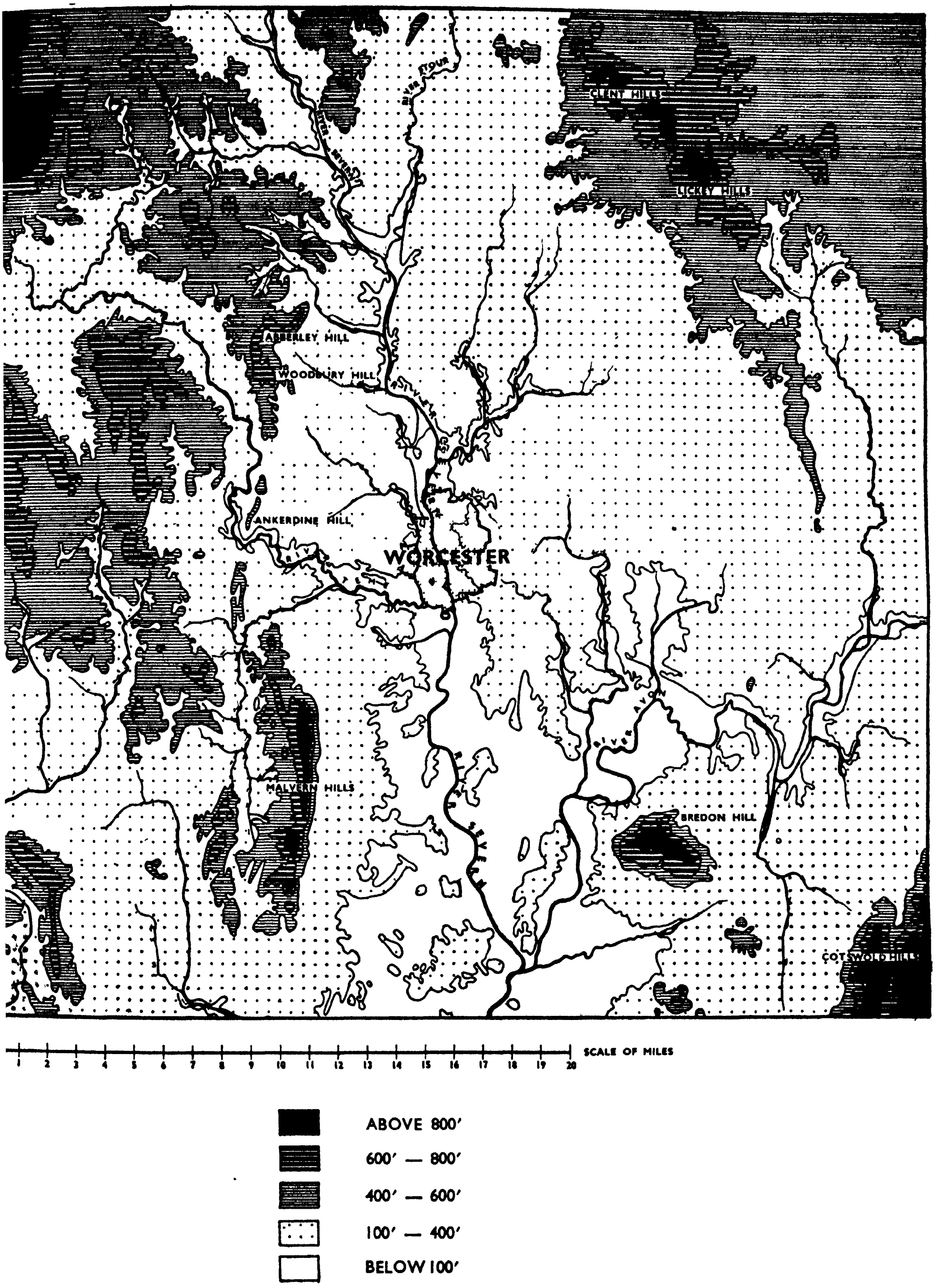

Fig. 6. The Physical Setting of the City of Worcester.

engineering difficulties in regard to foundations of bridges, locks and weirs. In view of the practical importance of these river deposits in controlling the development of the City, they must be considered further.

It is known that the area of these deposits once lay within the sphere of influence of several ice sheets. Evidence suggests invasion by (i) the first Welsh Glacier which spread Welsh 'erratic' or far-travelled rocks, and more local Triassic material, over a wide area east of the Malvern–Abberley line and north of the Cotswolds; (ii) the Great Eastern Glacier which moved down the Avon Valley towards a second Welsh Ice Sheet; and (iii) the main Irish Sea Glacier which reached as far south as Bridgnorth and supplied the far-travelled rocks found in the river deposits on which the City is built.

It is probable that the floodwater, due in the main to the melting of the ice and to the greater precipitation of those days, was responsible for the removal of a large part of the drift and its redisposition in a series of extensive flood plains, the sand and gravel of which now form a succession of terraces at different heights, a fact that implies that this process was repeated intermittently. The flood deposits would continue accumulating at a particular level as long as sea level was unaltered, but as this fell the valley was deepened and new flood deposits filled its bottom, while parts of the former alluvium were left as flat-topped terraces on its sides. The most recent deposit is the alluvium of the flood plain existing today, of which Pitchcroft forms a part.

Professor L. J. Wills* has classified the terraces of the Severn into a series of five which, in descending order of age and height, he has called: Woolridge Terrace, Bushley Green Terrace, Kidderminster Terrace, Main Terrace and Worcester Terrace. The highest terrace found near Worcester is the Kidderminster Terrace, which covers the high ground at Hallow. It is mainly composed of gravel. But the lower four terraces are mainly sand with bands of gravel. St. John's is built principally on deposits of the Main, while Worcester proper spreads across the Worcester Terrace, the difference in levels of the two parts being an index of the difference of valley floor levels at the two periods. Figs. 24 and 25 (in which names appear) show the extent to which the development of the City reflects geological circumstance.

The Main Terrace extends through St. John's to Henwick, its surface 80–100 ft. above ordnance datum and 60 ft. above the river, and its base resting on Keuper marl. East of the river there is a big spread north round Perdiswell Park, Cornmeadow Green and Claines, separated from the more recent and lower Worcester Terrace by a narrow scarp of the marl. The Worcester Terrace in the neighbourhood of Worcester

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* Professor of Geology, University of Birmingham, to whom we should like to acknowledge our indebtedness for invaluable advice.

Brewery (Barbourne Road) is about 20 ft. thick and under New Bank Street, Barbourne, about 15 ft. 6 in. A boring was made here in 1903 and the particulars communicated by the borers are as follows:

		Thickness		*Depth*	
		ft.	in.	ft.	in.
Top soil		3	0	3	0
Superficial deposits	Gravel and sand	3	6	6	6
	Sand	10	6	17	0
	Sand and gravel	1	6	18	6
Keuper marl	Red and blue marl	79	6	98	0
	Red marl and gypsum	16	0	114	0

Water level 20 ft. below surface. Yield of 1,000 gallons per hour.

Since the terrace deposits consist in the main of a great variety of horizontally bedded gravel and sand with a few large boulders, they provide easily drained foundations for houses. The gravel is composed of pebbles similar to those obtained from the Bunter and Permian conglomerates and beds of the Lickey and Clent districts, mixed with far-travelled debris from Wales, the Lake District and even the south of Scotland. The earliest record of man at Worcester consists of a flint hand-axe of the Acheulian palaeolithic culture found in the terrace deposits at St. John's. The same deposit has yielded teeth of mammoth and woolly rhinoceros.

The practical importance of these deposits apart from the easily cultivated soil they produce and their water-bearing properties, already referred to, are as follows: they provide level well-drained sites, building sand, a certain amount of concrete aggregate and satisfactory foundations for houses and small structures. On the other hand, they generally have to be excavated before large structures can be properly founded and precautions often have to be taken to deal with water troubles in excavations in them.

Geological factors have been directly responsible for the establishment of two major settlements within Worcester's sphere of influence. The larger of these, Malvern, has grown at the foot of the Malvern Hills which lie some eight miles to the south-west of Worcester and form a spectacular climax to the Palaeozoic outcrop framing the plain. The hills reach a height of 1,350 ft., though they rarely exceed a mile in breadth, and are quarried for road metal and the manufacture of artificial stone. The character of these exceptionally hard rocks is such that they allow the rapid percolation of rainwater through the numerous faults and fractures of their surface. This leads to excessive dryness of the hill surface, but the resultant springs are exceptionally soft and pure owing to the insolubility of the rock. This water encouraged an important tanning industry in earlier times, and latterly the medicinal properties of the water and the scenic beauties of the district have established Malvern as a health centre and inland resort.

The second major settlement is Droitwich, where the salt industry, dependent on the existence of thick layers of rock salt in the Keuper marl of this district, is established. The salt was first extracted from natural salt springs, but for many years past it has been obtained by evaporating brine, pumped from borings which tap the rock salt at depths varying between 160 and 170 ft. Salt has been extracted since early times, and land and salt rights were granted to the Church at Worcester from the beginning of the eighth century. Today the brine baths have been responsible for making Droitwich an important centre for the treatment of rheumatism, but the manufacture of salt once carried on in the town is now located at Stoke Works, four miles to the north. Droitwich itself has suffered much from subsidences connected with the extraction of this underlying salt. Some years ago the church tower had to be taken down owing to cracks due to salt subsidence.

§2. CLIMATE

THE characteristics of the climate or average weather of the Worcester area can be indicated by statistics of average rainfall and temperature. Reports from the thirty-three stations observing rainfall in Worcestershire show that the City of Worcester had (between 1925 and 1935) an average rainfall of 25 in. per year. This was lower than the rainfall in the west and north-east of the county, where it reached 30 in. in the Lickey–Clent area. The City rainfall was considerably lower than in the west of England and Wales generally, though somewhat higher than in the east of England as a whole. An important factor in the rainfall at Worcester (to quote Professor Wills*) is that 'the prevalent winds are from south-west and west and come up the Bristol Channel saturated with moisture from the ocean and pass inland along the Severn Valley.'

Thus the configuration of the country surrounding Worcester influences rainfall to a marked degree. The average rainfall over a period of years, or even for each individual year, is heavier on the higher land, facing the Severn Valley. Individual months do not show this influence since thunderstorms or cyclonic rains may affect the area and bring a fall of 4–8 in. in twenty-four hours. Such heavy rains, however, are rare and seldom occur twice in the same year in the same place. Excessive rainfall in short periods anywhere up river, such as central Wales (where rainfall is high), causes serious flooding of the Severn and its tributaries.

The mean temperature of the county ranges annually between 49·5°

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* *Cambridge County Geographies, Worcestershire.*

and 50·5° F. The county is thus 'one of the warmer parts of interior England.'* The City of Worcester itself is warmer than the higher ground composing most of the county. The annual mean temperature for Gt. Britain and Ireland during the standard period 1881–1915 is recorded as 47·9,† so that Worcester City may definitely be classed as having a relatively warm climate on the average.

Winter frosts are not of such importance to the fruit and market-garden interests of the Worcester area as the 'radiation' frosts of late spring. The radiation frost line lies at a level of 200–250 ft. above sea level but local frost pockets may occur as high as 600 ft. The most severe frosts occur at those places which have to accommodate substantial amounts of cold air draining off higher levels. Hedges and other obstructions on a slope may cause damage even at high elevations while orchards and fields with two- and three-way drainage generally show less damage.

Thus though increasing elevation tends to retard date of blossoming it can also bring this very real advantage of efficient frost drainage. The Worcestershire slopes of the western uplands and the Malverns combine this drainage facility with eastern aspect and would seem to be climatically suited to fruit-growing. The comparative immunity of the upper slopes of the Malverns from frosts was noticed in 1860 by Dr. J. Williams who observed 'many exotics flourish through the winter in the open air at Malvern which would perish by night frost in the valley below.'

Wind direction has important bearing on the siting of noxious industries and utilities, though noxiousness is diminishing with the increasing technical efficiency in the treatment of effluents, etc. The percentage of the time during 1935–44 which wind blew at Worcester from each direction‡ is shown in the form of a clock in Fig. 7. These percentages, and observations on them, may be summarized briefly:

Wind S. or S.W. ..	24%	S. fairly constant throughout year. Max. in July.
Wind W. or N.W...	13%	Max. in April.
Wind N. or N.E. ..	10%	N. max. in May; N.E. in January.
Wind E. or S.E. ..	8%	Little from June to December. E. max. in November; S.E. in January.
Light air	33%	Often northerly.
No wind	12%	
	100%	

The infrequency of east winds may be due to the obstruction of the rising ground to the east of the City on winds coming from that direction.

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* *Worcestershire Report of the Land Utilization Survey*, p. 429.

† *Statistical Abstract for the U.K.*, p. 1.

‡ Based on records of the Meteorological Office, Air Ministry.

§ 3. PRACTICAL OUTCOME

THE physical conditions set forth in this chapter form the basis of the facts and activities of Worcester and its area of influence which will be considered in future chapters. The siting of the City's houses, for instance, is governed by the height and slope of land which affects drainage, water supply, sewage disposal and aspect. The location of farms and villages in the area surrounding the City will be found to be determined by proximity to wells and springs rather than by agricultural convenience; and geological formations as well as climate exercise a strong influence on farming types. Of the four geological formations predominant in the area of the City's influence, two, the Lias and the Keuper marls, form a heavy clay soil. It is mainly on the Keuper sandstones, e.g. at Ombersley, and the sandy drift deposits, e.g. south of the City along the river, that market-gardening is successful.

Physical conditions are, however, not final in determining social structure and activities. Technical progress is gradually making good the deficiencies of some physical circumstances and developing the potentialities of others. Piped water, the electricity grid, and the tunnel carrying road or railway through a range of hills, are three of the more obvious examples. Physical characteristics certainly cannot be held altogether responsible for the muddled development of the prevailing urban order, and the misuse of natural sites is a major tragedy not confined to the Worcester area. Worcester possesses a site of great natural beauty, and future planning must, among other ends, work to restore the ravages of individual 'enterprise' and the devious working of land speculation.

Fig. 7 (opposite). WIND DIRECTIONS AND THEIR RELATIVE FREQUENCY

This 'wind clock' is based on observations at Perdiswell by the Meteorological Office of the Air Ministry. The force and direction of the wind are estimated every day, the relative frequency of each direction being expressed as a percentage of the total of days whether windy or not. The force is graded along the 'Beaufort' scale. Light air, not measurable by wind vane (Beaufort No. 1), *is omitted here. An indication of variability of direction of wind is shown by the maximum and minimum limits found in monthly averages (marked on the shaft of the arrows). Thus, in the ten years recorded, winds from the north,* 6·9% *of days* throughout *the year, were least in July, averaging* 1·7% *of days during that month, and most in May, averaging* 19·8% *of days during that month.*

Overall percentage frequency and the maximum and minimum months for winds from each direction (as given round the clock in 1935–44)*:*

	Average % of Days	Min.	Max.		Average % of Days	Min.	Max.
N.	6·9	July	May	S.	12·8	May	July
N.E.	3·0	Aug.	Jan.	S.W.	11·7	Mar.	July
E.	1·7	June	Nov.	W.	6·7	Oct.	April
S.E.	6·6	April	Jan.	N.W.	6·0	Nov.	April

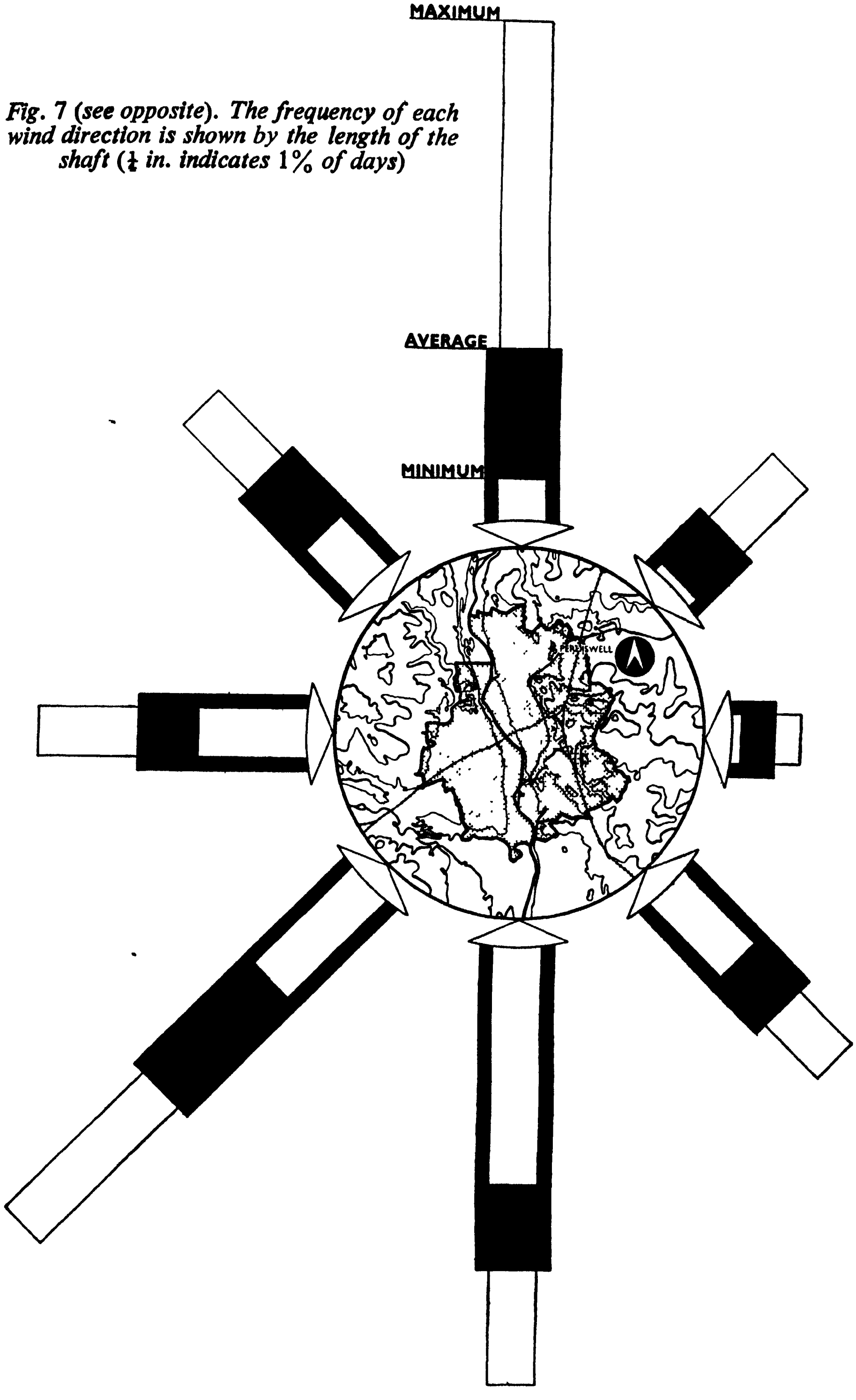

Fig. 7 (see opposite). The frequency of each wind direction is shown by the length of the shaft (½ in. indicates 1% of days)

CHAPTER III

POPULATION STRUCTURE AND TRENDS

The trend of population within the area covered by the Survey, as defined in Chapter I, has a practical importance to planning no less fundamental than the physical features; and in planning for houses, schools and many social services, the age-composition of the population is as important as its total. Population trends have in the past differed sharply as between town and country; so the precise urban-rural distribution of the settlement of the area must be considered as a prime factor, determining the general trend.

Population increases naturally by the predominance of births over deaths, or else by that of immigration over emigration. Rural areas of England have been particularly affected by emigration—and rural Worcestershire has been no exception to the 'rural exodus.' In the City there has been migration both ways; the picture is one of stability for the present. But, with other urban areas, it will undoubtedly share the general fall of population that faces the nation as a whole, together with an increasing proportion of older people—coming events which some planners do not seem to have taken into account. The precise degree of population fall is calculated in this chapter on a basis of reliable authorities. If, however, there are still 'doubting Thomases' one admitted fact may be pointed out: there were in 1931, *contrary to all census years up to* 1911, *fewer children aged* 0–5 *than children aged* 5–10. *Hence from about* 1945 *to* 1950 *there will be fewer adults entering reproductive ages than in previous years. This national failure to replace adults is reflected locally in Fig.* 10, *showing for south Worcestershire a lower population aged* 0–15 *than* 15–30.*

Rather than plan for increased population, most English cities must therefore plan for stability or even a fall in population. If

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* The wartime fall in births 1916–18 is here partly responsible.

they want an increase (at the expense of other places) they must deliberately set about attracting industries. This survey is not concerned with ultimate aims as to size of population—there are no recommendations at the end of this chapter—but it is concerned with the effective execution of any aim. If the City desires to enlarge its population in the future, expansion of economic activities —a subject for the next chapter—is clearly indicated.

§1. SETTLEMENT PATTERN AND GROWTH OF POPULATION WITHIN SOUTH WORCESTERSHIRE AND DISTRICT

THE natural advantages of site described in the last chapter made Worcester an early settlement. It increased in importance after the time of William the Conqueror, and was often the scene of battle, as in the time of King John and later during the Civil War. Paterson writing at the beginning of the nineteenth century gives the following description of Worcester:

> Worcester has the general reputation of being one of the best-built and most agreeable cities in the kingdom. Its situation is greatly favourable to the display of its buildings and the comfort of the inhabitants. Placed on the banks of the Severn, its spacious streets rise gradually from the margin of that river, whilst they are sheltered from the chill and injurious blasts of the east by a well-wooded hill. The circumference of the city is about four miles. The streets are in general broad and well paved, and continual improvements are taking place. The cathedral is of Anglo-Saxon origin. . . . In regard to the exterior, this edifice displays little ornament, but constitutes an object of great beauty, on account of its dignified proportions, and the elegant lightness of its architecture. The interior presents an august architectural display. . . . The palace of the bishop stands near the cathedral, on a commanding site, upon the banks of the river Severn. The parochial churches are ten in number, and several of them are highly respectable as architectural objects. The Guildhall is a spacious and handsome structure, finished in 1723, from a design of Mr. White, a native architect; and the bridge over the Severn, rebuilt in 1781, is an erection of considerable elegance.
>
> The commerce of this City is very great, arising not only from the surplus products of the county and its own manufactures, but from the great conveniencies resulting from its very extended water-carriage. The principal manufactures are those of a beautiful species of porcelain, and of gloves, which are much approved and are exported in large quantities. Worcester contains various gaols, almshouses, charity schools, a neat theatre, and a public infirmary; it sends two members to Parliament, has an excellent market on Wednesday, Friday and Saturday, and the hop-market in the season is one of the most considerable in the kingdom.*

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* *Paterson's Roads*, by Edward Mogg, published in 1822.

TABLE I

POPULATION CHANGES 1831–1931: SOUTH WORCESTERSHIRE, BROMYARD AND LEDBURY DISTRICTS

(Figures derived from Censuses of Population)

(A) Boroughs and Urban Districts

District	Present Acreage*	Population (round figures)			Changes 1831–1931	
		1831	1891	1931	Nos.	%
Worcester C.B.	5,394	30,000	42,900	51,700	+21,700	+ 72·4
Droitwich M.B.	1,735	2,500	4,100	4,800	+ 2,300	+ 92·0
Evesham M.B.	3,958	4,400	5,900	10,600	+ 6,200	+141·0
Malvern U.D.	7,400	4,500	14,400	16,700†	+12,200	+271·0
Bromyard U.D.	213	1,500	1,600	1,600	+ 100	+ 6·7
Ledbury U.D.	499	2,800	3,100	3,300	+ 500	+ 17·9

(B) Rural Districts

District	Parishes with Population Density Above 0·5 Per Acre in 1931	Present Acreage*	Population (round figures)§		Changes 1831–1931	
			1831	1931	Nos.	%
Martley R.D.	—	52,838	12,400	10,700	−1,700]	− 13·7
Droitwich R.D.	—	51,380	11,500	10,300	−1,200	− 10·4
Pershore R.D. .. .. Including	— Pershore (Holy Cross and St. Andrew) Wyre Piddle	57,801 6,137 381	14,400 3,110 180	13,800 3,440 320	− 600 + 330 + 140	− 4·2 + 10·6 + 77·8
Evesham R.D. .. .. Including	— Badsey .. .. .. South Littleton	52,872 1,312 813	11,300 360 110	14,100 1,190 480	+2,800 + 830 + 370	+ 24·8 +230·5 +336·0
Upton-on-Severn R.D. .. Including	— Upton-on-Severn.. .. Powick	50,947 3,211 5,250	13,700 2,340 1,600	12,600 1,970 2,820	−1,100 − 370 +1,220	− 8·0 − 15·8 + 76·3
Ledbury R.D. (part)‡ .. Including	— Colwall	26,241 3,835	6,000 910	5,100 1,990	− 900 +1,080	− 15·0 +118·7
Bromyard R.D. (part)‡ ..	—	35,430	6,800	5,000	−1,800	− 26·5
Total of Rural Districts, excluding Evesham R.D. ..		—	64,800	57,500	−7,300	− 11·3
Total of Rural Districts, excluding Evesham R.D. and also excluding parishes with population density above 0·5 per acre		—	56,660	46,960	−9,700	− 17·1

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* The figures for all dates have been adjusted to the existing acreage of the administrative areas shown in Fig. 3, p. 7.

† It is not possible here to make accurate comparison; the figures given for 1931 apply to April of that year and are thus considerably lower than if the census had been taken in the summer (see page 29).

‡ For the extent of these areas see Figs. 3 and 5.

§ For the individual parishes, the figures have been taken to the nearest 10.

At the time Paterson wrote, the area now covered by the City did not contain more than 30,000 inhabitants. Worcester has, therefore, doubled its population over the last hundred years, due to natural population growth and immigration from rural areas, largely retained by its development as a centre for manufacturing industries.

Within the area of influence of Worcester as a centre for marketing, trade and services generally—indicated in Fig. 5—there are four towns with the status of Borough or Urban District, which have a population of greater density than the Rural Districts. Malvern lies to the south-west of Worcester on the flank of the Malvern Hills; Droitwich (where salt deposits have established a health resort) to the north-east; and in Herefordshire, to the west and south-west, are the two small market towns of Bromyard and Ledbury.

To the south-east of Worcester, Evesham, situated on the river Avon, is the nearest borough (15 miles) and serves as an important marketing centre for the agricultural, fruit-growing, and market-garden districts of its area. Though lying in south Worcestershire (Area III, in Fig. 5), it does not come within the thick line bounding Worcester's area of influence, since it forms an 'island' market centre of its own, with little dependence upon Worcester in either the economic or the social sphere.

The ancient market town of Pershore—also on the Avon—stands midway between Worcester and Evesham. It comes within Worcester's sphere of influence, though at the same time having important contacts with Evesham. Since the decline of the wool-stapling trade upon which it once depended, the town serves an important function as a market centre, particularly for fruit and market-garden crops. Pershore stands as the head of a Rural District; it is not governed by an Urban District Council, though in population it is twice the size of Bromyard Urban District and slightly greater than Ledbury Urban District. Its population was also greater than these two towns in 1831, being at that time about the same size as Droitwich.

The changes and developments in population 1831–1891–1931 for both the Urban and Rural districts within south Worcestershire, and the Bromyard and Ledbury districts of Herefordshire are given in Tables IA and IB.

Each of the Boroughs and Urban Districts increased in population over the century 1831–1931.

Malvern had the largest proportional increase, rising from a figure of some 4,500 persons in 1831, to an 'out-of-season' population of 16,700 in 1931. A brief analysis of the industrial structure of Malvern in 1931 is sufficient to show that this unusual expansion was almost entirely due to the increasing importance of Malvern as a health centre. Of the total population in 1931, only 6% were employed in manufacturing industry, against a figure of 16% for England and Wales as a whole, and 19·5% for the County of Worcestershire; and of the total number of employed persons 83·3% were in 'service' industries compared with 55·8% for England and Wales. Malvern became particularly highly developed in both the professional and personal services. From 1931 to 1939 there was little, if any, further increase in population, nor was there any development in the manufacturing industries until the establishment of wartime concerns.

Droitwich nearly doubled its size over this same period, 1831–1931. This rise depended on the extension of hotels and other services connected with the brine baths. Of a total insured population of approximately 1,700 in 1939, as many as 25% were employed in hotels and catering and 46% in other 'service' industries. The remaining 29% comprised 18·3% in agriculture and 10·7% in the manufacturing industries against comparative figures of 5% and 50·5% respectively for Worcester. The development of Droitwich as a spa—as also the growing popularity of Malvern as a health and pleasure resort—has a direct effect upon trade in Worcester to which there is (see Chap. V) convenient access both by road and rail.

The growth of Worcester up to 1931, unlike Malvern and Droitwich, was dependent upon its development as an industrial centre. At the same time, through improved means of transport and the expansion of neighbouring places such as Malvern, it has been able to extend its trade and its facilities for education, health, recreation and other services as described in later chapters. The population of Worcester calculated on the basis of its existing boundaries could not have been more than 30,000 in 1831. There was an increase of approximately 3,000 by 1861, since when Worcester had a consistent ten-yearly increase of at least 2,000. The years 1850–1900 mark the introduction of metal and engineering firms, which increased very considerably both in numbers and size in subsequent years —Table VI in Chap. IV indicates the date of establishment of these, together with other existing larger firms in Worcester. It can also be seen from this table that some twenty of these larger firms, eleven in the metal and engineering industries, established themselves since 1931. Indeed, in the decade prior to the outbreak of war, the population increased by a greater amount than in any decade of 1831–1931. By mid-year 1939, the population estimate was 53,800, and the abnormal 1944 figure stands at approximately 60,500.

The other Boroughs or Urban Districts in Table I are all market towns. Evesham had the largest increase in population over the century, rising by 6,200 to a total of 10,600 in 1931—sufficient in size, and by nature of its trade and industries, to be independent of other large towns as a source of employment or other services. The two smaller market towns showed comparatively little growth. Bromyard increased from about 1,500 to only 1,600 in 1931; Ledbury grew from 2,800 to 3,300.

The trends shown in Table IA are reversed in the case of the rural areas (see Table IB) from which the population has migrated and thus contributed, in part, to the urban increases. By excluding from Table IB the figures for Evesham Rural District, the remaining area—corresponding roughly to the rural part of the 'area of Worcester's influence'—shows a decline of 7,300 persons (11·3%). Further, by excluding from this latter area all parishes—often residential like Powick or Colwall—with over 0·5 person per acre, the figures at the bottom of the table illustrate even more clearly the rural depopulation which has taken place. This last calculation shows a loss from the rural areas of 9,700 persons, equal to as much as 17·1%. It can be seen that the trends in the Evesham Rural District have been in the opposite direction, but here a unique system of market-gardening has grown up, employing a densely populated agricultural community unlike other rural areas in the country.

In the subsequent sections of this chapter, the present and future trends of the population, in size and age-composition, will be taken in detail for the districts centring on Worcester. As an indication of these trends, particular consideration will be given to the south Worcestershire area (Area III in Fig. 5)—rather than to the 'area of Worcester's influence' (bounded by thick line)—as it has not been possible to obtain the data necessary for statistical calculations except on the basis of existing Urban and Rural District boundaries. On this account the population totals will appear greater than would otherwise be the case, and it must be borne in mind that the past increase within the Rural District of Evesham did not occur in the other rural parts of the area.

§2. PRESENT POPULATION TRENDS

PREVIOUSLY, the population trends in the County have differed from those of England and Wales, but since 1921 the rate of increase for the County, as shown in Table II, has been about the same as that for the whole country.

Indeed, population trends throughout the country have shown that areas which previously had a high rate of natural increase of population are now approaching uniformity with other areas.

There are, however, certain small modifications to this general rule, e.g. the average gross reproduction rate* in Rural Districts was, in 1931,

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* The gross reproduction rate shows the average number of girls born to a woman who lives through child-bearing age. It is calculated by adding the specific fertility rates (ratio of female births to female population) of individual years of age. Wherever the gross reproduction rate is constantly below 1·0 the population must die out, even if every new-born girl lives through child-bearing age.

TABLE II

GENERAL INCREASE OF POPULATION, 1901–31

Date	Worcestershire	England and Wales
1901–11	15·2%	10·9%
1911–21	4·6%	4·9%
1921–31	5·6%	5·5%

higher than the average rates in Urban Districts and County Boroughs. Similarly, it was found that counties with more than 35% of adult women employed in industry (of which Worcestershire is one) had an average gross reproduction rate of 0·87, whereas those with 15–20% or 20–25% of women in industry had corresponding figures of 1·18 and 1·055 respectively.* In the area at the moment under survey, the effects of these two factors would be in opposite directions. The fact that south Worcestershire has a rural character would lead one to expect high birth-rates; but the relatively large proportion of women employed in industry in parts of the area would result in some modification. In such a small

TABLE III

POPULATION INCREASES AND DECREASES WITHIN ADMINISTRATIVE AREAS OF SOUTH WORCESTERSHIRE, 1921–31

(Changes expressed as + and – percentages respectively)

Administrative area	Net change	Change caused by balance of births and deaths	Change caused by migration
Worcester C.B.	+ 3·5	+ 3·8	– 0·3
Droitwich M.B.	– 0·8	+ 1·1	– 1·9
Droitwich R.D.	– 5·5	+ 2·9	– 8·4
Evesham M.B.	+ 1·3	+ 6·7	– 5·4
Evesham R.D.	+ 7·7	+ 5·8	+ 1·9
Malvern U.D.	– 12·2	– 0·7	– 11·5
Martley R.D.	+ 1·3	+ 4·7	– 3·4
Pershore R.D.	– 1·0	+ 3·8	– 4·8
Upton R.D.	– 1·7	+ 2·3	– 4·0

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* Enid Charles and Pearl Moshinsky in *Political Arithmetic* (Ed., Lancelot Hogben), pp. 106–60

area as this, however, the factor of migration is likely to have more significance in making for differential trends than that of the two factors mentioned above. Table III gives the details of population changes in south Worcestershire 1921–31, as affected by normal births and deaths and by migration.

Out of the nine administrative areas only one, Evesham Rural District, shows an influx of population, while five areas show a net decline. In four cases this is due to movement out of the area, but in the case of the fifth, i.e. Malvern, conclusions should not be drawn, as the 1921 Census was taken in the middle of June, when the schools were in residence and the town was accommodating an abnormal number of visitors, whereas the 1931 Census was taken during the schools vacation (April) and outside the holiday season.

An estimate of the distribution of the population between the various age-groups as well as the total for the central and southern districts of Worcestershire is necessary for the planning of various services. For instance, the size and trend of the 0–5 and the 5–15 age-groups will provide basic data for the provision of nursery and other schools respectively, while at the other end of the scale, the size of the age-group over 65 will determine the amount of housing and health services and the provision to be made for older people, if such provision should be thought necessary.

The results of emigration from the area under consideration is shown by the age-composition of the population in 1931, which in Table IV is compared with that of England and Wales. These figures are illustrated in Fig. 8.

Here it can be seen that each of the three age-groups between 0 and 45 is proportionately smaller in the area under consideration than in England and Wales.

The position is roughly the same whether we consider Worcester City only or the rural parts of the area. In view of these figures and those of migration, it can safely be assumed that it is the young people of marriageable and reproductive age who are leaving the area. This depletion in younger adults is particularly significant when viewed in the light of the trend towards diminishing national population. Fertility rates show a tendency to fall nationally and the fall in the number of younger adults within this particular area is likely further to decrease the birth-rates.

§3. GENERAL FORECASTS OF POPULATION

It is agreed by experts that the total national population is approaching stability and that at most it is not likely to rise by more than 5% above the figure for 1939. The maximum population will probably be reached

TABLE IV

COMPARISON OF THE AGE-COMPOSITION OF THE POPULATION OF ENGLAND AND WALES AND SOUTH WORCESTERSHIRE, 1931*

Age-group	Worcester C.B.		South Worcestershire excluding Worcester C.B.		Total South Worcestershire area		England and Wales	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
0–15	11,778	22·8	21,255	22·8	33,033	22·8	9,530,198	23·85
15–30	12,943	25·05	21,891	23·4	34,834	24·0	10,286,088	25·75
30–45	10,610	20·5	18,333	19·6	28,943	19·9	8,521,878	21·35
45–65	11,572	22·4	22,067	23·6	33,639	23·15	8,651,004	21·65
65 plus	4,783	9·25	9,974	10·6	14,757	10·15	2,963,209	7·4
Totals ..	51,686	100·0	93,520	100·0	145,206	100·0	39,952,377	100·0

* Extra population of areas added since 1931 have been distributed among the age-groups in the same proportion as existed in the population of the 1931 area.

about 1950 after which it will start to decline, slowly at first and then gaining momentum. The total population in 1970 is not likely to be very much less than the present population, though its composition will have changed; the numbers of children under 15 will have decreased while the number of old people over 65 will have increased. If these two groups, viz. those under 15 and over 65, are together counted as depending economically upon the rest of the population, the proportion of dependants to productive members of the population will remain the same for the next 25 years, after which time it will probably increase.

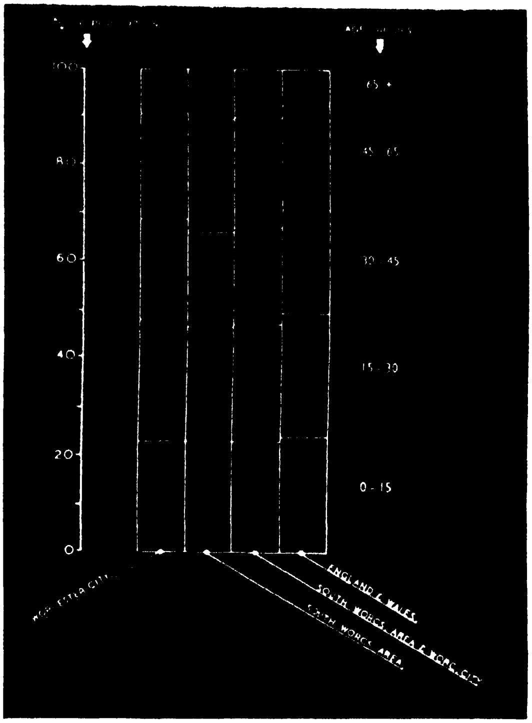

Fig. 8. *Age-structure of the* 1931 *Population: Worcestershire Areas compared to England and Wales. The local areas show a higher percentage of older people than the country as a whole.*

Two independent estimates of future population are given in Table VA.

Estimate I was made by the Registrar-General in 1942 and is based on the probable trend between estimates of the most and least favourable situations. The least favourable situation is taken as that brought about by a 10% fall in fertility rates and a 10% rise in mortality rates, over the period 1937–71. The most favourable situation is that brought about by a 10% rise in fertility rates and a 10% fall in mortality. The plus or minus deviations under each figure in the table represent these two possibilities.

There has been much criticism of this forecast from statisticians and others, and there have been attempts to correct the alleged errors. But from the total controversy, two things are fairly clear: firstly that the form and amount of detail of the statistics available to the Registrar-General, or anyone else, are inadequate for making an accurate forecast, and secondly that if this estimate is in error, it errs on the side of complacency and that the probable decline of population is much nearer and much greater than the Registrar-General supposes.

Therefore a second estimate, made by Dr. Enid Charles,* is given for

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* *Political Arithmetic* (Ed., Lancelot Hogben), pp. 73–105.

TABLE V

ESTIMATES OF TOTAL FUTURE POPULATION OF GREAT BRITAIN

(A)

I. Estimate by Registrar-General

Actual population	Forecast population (in thousands)			
1937	1941	1951	1961	1971
46,008,000 ..	46,565	47,501	47,192	45,980
Deviation* ..	± 25	± 280	± 805	± 1,579
Rise or fall on 1937.. ..	+ 1·2%	+ 3·2%	+ 2·6%	− 0·6%

* Adjustments to be made, plus or minus, to allow for the most favourable or least favourable situations respectively.

II. Estimate by Dr. Enid Charles

Actual population	Forecast population (in thousands)				
1937	1940	1950	1960	1970	1980
46,008,000	45,881	45,913	44,809	42,704	39,928

(B)

Age-composition of the Registrar-General's Estimate of the Future Population

Age-group	Actual population	Forecast population (in thousands)			
	1937	1941	1951	1961	1971
0–15	10,179,000	9,573	9,054	8,433	7,600
15–30	11,305,000	11,080	9,882	8,762	8,421
30–45	10,351,000	10,897	10,993	10,168	8,764
45–65	10,303,000	10,689	12,061	13,339	13,332
65 and over ..	3,870,000	4,326	5,511	6,490	7,863
Total	46,008,000	46,565	47,501	47,192	45,980
Relative increase	100·0	101·2	103·2	102·6	99·4

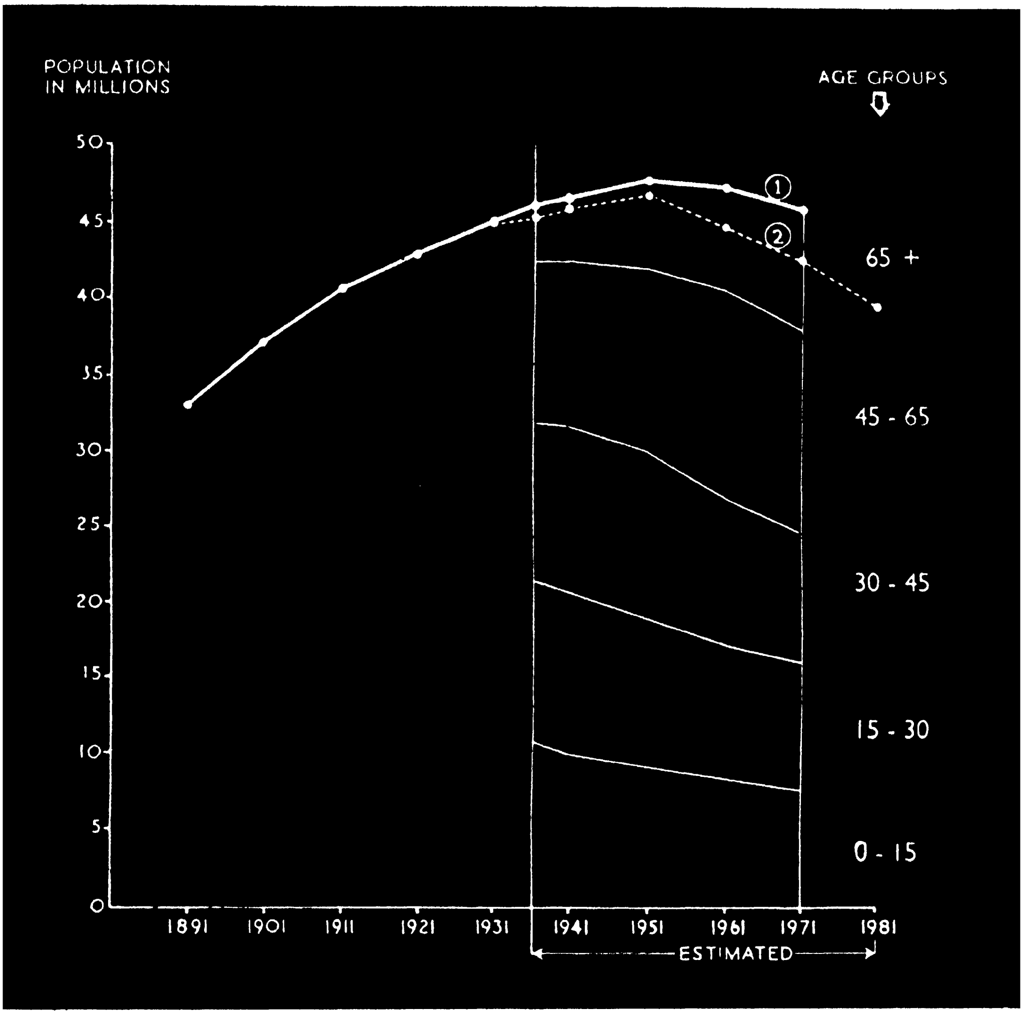

Fig. 9. Past and Estimated Future Population and Age-structure of Great Britain. (*Estimate* (1) *by Registrar-General,* (2) *by Dr. Enid Charles.*)

comparison and is shown alongside the first in Fig. 9. This estimate is based on the assumption that fertility and mortality rates remain the same as in 1933. Both estimates agree that the maximum population will be reached about 1950, though they differ regarding the magnitude of the subsequent decline.

Equal in importance to the total future population is its probable age-composition. The age-composition of Estimate I is given in Table VB and illustrated in the graph, Fig. 9.

Any estimate which foresees a bigger decline in total population would also emphasize the changes in age-composition, i.e. still smaller proportions in the lower age-groups and still higher proportions in the older groups.

§4. THE FUTURE POPULATION OF THE SOUTH WORCESTERSHIRE AREA

THE fact that the population of south Worcestershire already showed this characteristic in its relative age-composition by 1931 seems to suggest that the subsequent decline here will be greater than otherwise, in the absence of any correcting factor.

Even assuming the same trends in fertility and mortality rates for the south Worcestershire area as for England and Wales, the national forecasts mentioned cannot be applied in the smaller area, except to a population of the same age-structure. As was shown earlier, the age-distribution in this smaller area does differ from that of England and Wales, mainly on account of migration. A special forecast of the future population of south Worcestershire must therefore be made.

Table VI gives the actual age-distribution of the population in 1931 and compares it with what it would have been had the population been distributed among the age-groups in the same way as that for England and Wales.

TABLE VI

DIFFERENCES IN AGE-DISTRIBUTION, 1931: SOUTH WORCESTERSHIRE AND ENGLAND AND WALES

Age-group	Actual distribution South Worcestershire	Distribution on standard of England and Wales (round number)	Deficiency (−) or Excess (+)
0–15	33,033	34,700	− 1,667
15–30	34,834	37,400	− 2,566
30–45	28,943	31,000	− 2,057
45–65	33,639	31,400	+ 2,239
65 plus	14,757	10,700	+ 4,057
Total	145,206	145,200	

The third column shows the deficiency or excess of actual from the standard population in each age-group and it will be seen that the population in the three lower age-groups is deficient by about 6,300 while it has an excess of 6,300 in the 45–65 and 65-plus age-groups.

In most towns in England for which statistics are available, it has been found that women between 15 and 30 account for 54% of live births and that those between 30 and 45 account for 45%. Thus the effect on the future population of the remaining age-groups above 45, even remembering that the figures refer only to women's ages, is likely to be so small that it can be ignored. If we temporarily exclude the excess of 6,296 in the higher age-groups of Worcester we should be left with a total population of 138,910 instead of 145,206. This 'corrected' population in 1931 would have almost the same age-composition as that of England and Wales, as is shown in Table VII.

TABLE VII

AGE-DISTRIBUTION IN PERCENTAGES, 1931: CORRECTED POPULATION FOR SOUTH WORCESTERSHIRE

Age-group	South Worcestershire area		England and Wales
	Nos.	%	%
0–15	33,033	23·8	23·85
15–30	34,834	25·2	25·75
30–45	28,943	20·9	21·35
45–65	31,400*	22·4	21·65
65 plus	10,700*	7·7	7·4
Total	138,910	100·0	100·0

* 'Corrected' figures—see text.

On the same principle of excluding excess population in older groups, the corrected population for 1937 becomes 147,400 minus 6,350 equals 141,050. To this corrected population can be applied the forecast made by the Registrar-General for Great Britain. The changes in total population on this calculation would be as follows:

1951 + 3·2% = 145,500
1961 + 2·6% = 144,700
1971 – 0·6% = 140,200

To these must now be added the survivors of the excess of persons in the two oldest age-groups living in 1937, approximately 2,250 in the 45–65 age-group and 4,100 in the 65-plus age-group, in order to obtain a realistic future estimate for the area. Consulting the figures on the normal expectation of life in 1931, and allowing for the distribution between the sexes and ages within each group, we find that the expectation of life of the

45–65 age-group was 22 years, and that of the 65-plus group 10 years, so that there will not be many more than 500 alive by 1951 and none by 1961. Thus assuming that the national estimate which we have adopted is accurate, that migration ceases, that fertility and mortality rates follow the course estimated by the Registrar-General,* the population forecast for the south Worcestershire area will be as shown in Table VIII and illustrated in Fig. 10.

TABLE VIII

SOUTH WORCESTERSHIRE AREA: ESTIMATED FUTURE POPULATION

(A)

Total population

ACTUAL POPULATION			ESTIMATED FUTURE POPULATION		
April	June	June	Mid-year		
1931	1937	1939	1951	1961	1971
145,206	147,400	148,000	146,000	144,700	140,200

(B)

Age-composition of population

Year	0–15	15–30	30–45	45–65	Over 65	'Corctd.' population	Total population
1931	33,033	34,834	28,943	31,400 + 2,239	10,700 + 4,057	138,910	145,206
1951	27,800	30,200	33,600	37,000	16,900 + 500	145,500	146,000
1961	25,960	26,900	31,100	40,750	20,000	144,700	144,700
1971	23,100	25,700	26,800	40,600	24,000	140,200	140,200

Just as forecasts of total population could only be applied to a population with an age-composition corresponding to that of England and Wales, so estimates of the future age-composition should be applied to the 'corrected' population for 1931 with an adjustment for the two oldest age-groups in 1931 and 1951. The results obtained by this calculation are given in Table VIIIB. This shows a continuous decline in the size of the first three age-groups after 1951; such a decline, of course, accelerating quicker than the decline in total population. The fourth age-group, i.e. those from 45–65, though following the same movement, will still be bigger in 1971 than in 1951. The oldest age-group, i.e. those over 65, will show a continual steep increase in numbers as well as in proportion to other age-groups. The truth of these estimates depends upon the same considerations as those mentioned as governing the value of the forecast of total population.

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* As stated above, in the view of experts this overestimates future population.

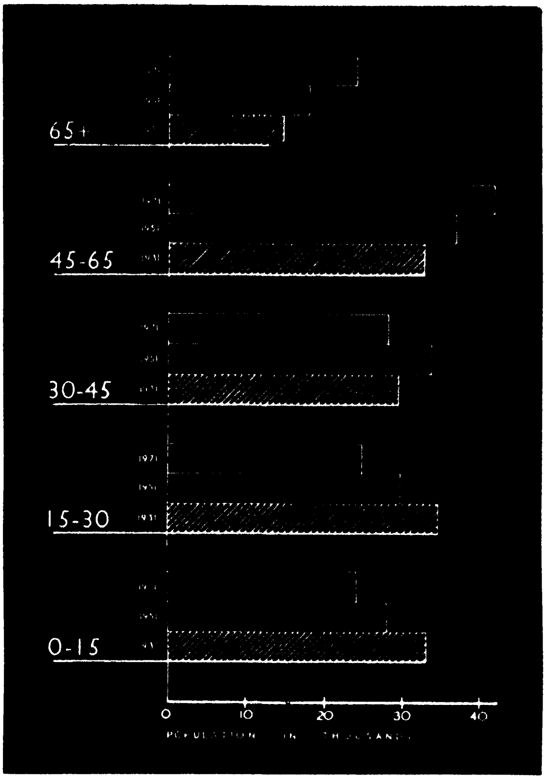

Fig. 10. *Past and Estimated Future Population in Age-groups: South Worcestershire* (1931, 1951, 1971).

To sum up. The population of this south Worcestershire area is not likely to go much beyond the 1939 level, apart from developments such as the introduction of new factories, or retention of wartime expansion, both of which will be considered later. But though the total population of the area will not change much by natural increase, the age-structure will change substantially. There will be more older and fewer younger people compared with adults of working age, and plans for housing and schools and for provisions for the aged must take account of these changes.

§5. THE POPULATION STRUCTURE OF WORCESTER CITY

THE tendencies shown to exist in the present age-composition of the population of the south Worcestershire area and the forecasts made from them apply equally to Worcester City as to the whole, though it is not justifiable to attempt to analyse and forecast trends in a population as small as that contained by the arbitrary line of the City's boundary.

The composition of the population of the City was obtained by examining a large sample of the families (every fifteenth house) in the City, together with official statistics already available. The information upon which the figures are based was collected from March to October 1944 and, since it was an examination by sample and not a complete census, the picture given can only be taken as roughly representing the mid-year position. Further, the figures given below do not cover the population living on shop premises, in lodging-houses, hotels or hostels.

The sample investigation covered approximately 56,000 people, and the following calculations are based on this number. This estimated population of 56,000 is contained in about 14,250 households, distributed in Table IX.

TABLE IX

DISTRIBUTION OF HOUSEHOLDS OF DIFFERENT SIZES, 1944

Size of household	Number of households	Percentage of households	Aggregate number of persons	Percentage of total persons
1 person ..	464	3·3	464	0·8
2 persons ..	2,336	16·4	4,672	8·3
3 persons ..	3,360	23·5	10,080	17·9
4 persons ..	3,664	25·7	14,656	26·0
5 persons ..	2,016	14·1	10,080	17·9
6 persons ..	1,344	9·4	8,064	14·3
7 persons ..	576	4·1	4,032	7·2
8 persons ..	272	1·9	2,176	3·9
9 persons ..	128	0·9	1,152	2·0
10 persons ..	64	0·5	640	1·1
11 persons ..	32	0·2	352	0·6
Total ..	14,256	100·0	56,368	100·0

Children of school age and under comprise approximately 23% of the population. They are distributed among households as given in Table X.

The dependent children, totalling about 13,000, are distributed among approximately half the households, while the other half have no dependent children living with them. The large number of households without children reflects not only the falling birth-rate of recent years—which nevertheless was higher in Worcester than the average when applied to the relevant age-groups—but also the very high proportion of old people whose families have grown up and left home.

TABLE X

DISTRIBUTION OF CHILDREN AMONG HOUSEHOLDS

	No. of households	Total No. of children
Households with		
0 child	6,825	0
1 child	3,800	3,800
2 children	2,326	4,652
3 children	850	2,550
4 children	260	1,040
5 or more children ..	195	975 +
Total ..	14,256	13,017 +

The number of households with one or two children (3,800 + 2,326 = 6,126) is 87% of the number of households (3,360) with three or (3,664) four members shown above. The two groups are probably in large measure identical and it can be assumed that households of three or four members consist largely of parents and young children only, rather than parents, young, and grown-up children. If they were entirely identical, of the total of children in the City (13,000) approximately 3,800 would be found with no other children in the family, 4,650 found with one brother or sister and only 4,550 would live in families where there are three or more children. If the education of the 'only child' or of the child with very little company at home, presents special problems, it is important that these estimates be borne in mind. They will also be relevant to the consideration of the kind of provision which should be made for recreation of juveniles and adolescents.

A rough estimate of the age-composition of the City based on the sample representing a total population of 56,000 shows the following groups:

Dependent children:	
Under 5	4,250
Over 5	8,750
Persons over 60	7,000

These three groups together account for about one-third of the total population, the remaining two-thirds represents the population of working age.

As a general indication, the following percentages estimate the wartime occupational distribution of the normal population living in Worcester during the war:

Dependent children		23%
0–5	7·5%	
Over 5	15·5%	
Adults of working age (up to 60)		65%
Employed in Industry	46%	
Housewives (and not earning)	19%	
Over working age (60)		12%
		100%

The business activities of the 46% employed in Industry are analysed in detail in the following chapter.. Subsequent chapters dealing with educational facilities, social services, shopping facilities and general amenity depict the facilities and services available to all classes of the community, and show the modifications and developments which may be required to meet future population changes, brought about by either natural processes described above, or increases due to a deliberate future policy of development as an industrial or social centre.

CHAPTER IV

INDUSTRY

Since no one can live far from his work, the existing industries and the choice of new industries are fundamental to the planning of any community. Industry includes a variety of economic activities, involving different materials (or none), different types of workers and markets, and exhibiting different incidence of unemployment, different location patterns, sizes of plant, and investment of capital.

A basic consideration in surveying an existing community for planning purposes is thus its industrial structure, i.e. the relative importance of each of its various economic activities, and the recent changes and trends in this structure.

The City of Worcester and its surrounding rural areas will be shown as a relatively well-balanced economy in the variety in size of its factories and the diversity of its employments. Within this area, figures will show clearly that the City specializes as a public utility, transport, and commercial centre; while the surrounding area is devoted to agriculture. Yet even in the City by itself, as the profile chart (Fig. 11) *shows, there was in* 1931 *a fairly balanced economy similar to the national economy as a whole. Like many other English county towns of about the same size,* the City had considerable manufacturing business. Some of the local products and processes are illustrated in Figs.* 65–9. *Yet no one group of manufacturing industries predominated. Here, as the profile chart also demonstrates, Worcester differed radically from County Boroughs nearby such as Dudley, Wolverhampton, Stoke, and Burton with their specialization in metals, pottery, or beer, and their low proportion of personal, professional, and other services. The metal group of industries, however, was growing fast in*

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*For example, Bedford, Cambridge, Carlisle, Chester, Exeter, Gloucester, Ipswich, Lancaster, Maidstone, Northampton, Lincoln, Oxford, Reading, Shrewsbury, Stafford, York. All these boroughs had a population of between 30,000 and 100,000 and at least 20% of their employed population in manufactures.

Worcester after 1931 (*and especially during the war*), *and now predominates. Lacking the Census of* 1941, *developments from* 1931 *to* 1938 *are disclosed by the use of statistics of the Ministry of Labour, and the development up to* 1943 *by our own questionnaires issued to the larger Worcester firms.*

The main purpose of planning in relation to the industries of any locality must be to secure the highest and most stable possible employment for the various types of workers, at the highest possible standard of living and working that is compatible with the national plan. *If the conclusions of the Barlow Commission are to be followed out, national policy will lie in the redevelopment, decentralization, or dispersal of congested areas, and the diversification of industry in each region of the country.* Of particular concern to Worcester and all similar County towns is the policy of dispersion. Worcester may well have to take its share of such dispersible industries as are suitable, particularly if the Scott Committee's recommendation is followed that large-scale industry should not settle in villages or open country.*

The City will be found to have a low rate of general unemployment, and specific danger points to be safeguarded will appear in the reduced numbers employed in the glove industry, the cyclical unemployment connected with the growing metal industries, and the general tendency for wide seasonal fluctuations in employment. In addition to measures for reviving the glove industry by training in technical skill, management, and design, the survey indicates the need for securing new sources of employment for women released by the glove industry but not absorbed in metal work, and the need for stable industries to level out the cyclical ups and downs of the metal trades.

In this chapter the objective is set up that the total of a city's industries should offer opportunities to men, women, and young persons in proportions matching the working capacities and willingness to work of the men, women, and young persons found in the community. Worcester's potential working population, like that of other communities, has, no doubt, a wide distribution of divergent capacities, depending partly on age. The problem of finding or maintaining industries offering the suitable proportion of routine and unskilled, semi-skilled, clerical, and responsible skilled and managerial occupations is approached in a practical way. The fact, for instance, is faced that all over the country the

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*Royal Commission on the Distribution of the Industrial Population, par. 428 (4).

supply of young workers will diminish owing to the fall in the birth-rate and the raising of the school-leaving age; but it is also suggested that the war practice of employing women part-time might be continued.

In their haste to achieve 'balanced' economies, planners have in the past perhaps unduly neglected the advantages of specialization based on inherent differences which the classical economists insisted upon. Each locality when planning its future should therefore take thought of its special advantages. Worcester's particular advantages are its proximity to the West Midland industrial concentration, its position in the centre of an agricultural area, and its architectural and natural amenities. The first advantage, backed by adequate means of transport, underlies the development of its metal industries; but the third is of a different order and points to the further development of Worcester as a holiday and tourist centre. The actual development of the metal industries and the possible development of tourist industries entail special problems in securing high and stable employment, and the chapter closes with some discussion of their solution.

§1. THE INDUSTRIAL STRUCTURE OF WORCESTER CITY AND SOUTH WORCESTERSHIRE

THE industrial structure of Worcestershire as a whole was analysed in Chap. I, and three distinct areas within the County were shown to differ radically in their industrial make-up. The analysis may now be taken a stage farther by separating Worcester City from the rest of Area III, the southern area of Worcestershire,* of which it forms a centre.

It can be seen from Table I and Fig. 11 that Worcester in 1931 provided well-balanced employment on the whole and was not too dependent on any one group of industries†. There was, however, some specialization in the Metal and Clothing industries. In the Metal industries taken together there were 15·25% of the total employed as against 10·55% for

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*See Table III and Fig. 5 in Ch. I.

†These groups of industries are standard and appear in Tables I to VII and XI. References to them in this chapter are indicated by the use of capitals.

TABLE I

INDUSTRIAL STRUCTURE OF WORCESTER CITY AND SOUTH WORCESTERSHIRE,* 1931

Comparison with England and Wales

	England and Wales		Worcester City			Rest of South Worcs			Total South Worcs		
	Numbers employed	% of total	Numbers employed	% of total	Location quoticnt†	Numbers employed	% of total	Location quotient†	Numbers employed	% of total	Location quotient†
I. Agriculture and Fishing	996,825	6·0	299	1·3	0·23	12,118	29·0	4·87	12,417	19·4	3·23
II. Mining and Manufacturing											
1. Mining and Quarrying	984,014	5·9	31	0·1	0·02	678	1·6	0·27	709	1·1	0·19
2. Bricks, Pottery, Glass	184,389	1·1	407	1·8	1·64	245	0·6	0·55	652	1·0	0·93
3. Chemicals and Allied Trades ..	192,512	1·1	27	0·1	0·87	33	0·1	0·87	60	0·1	0·08
4., 5., 6. Metals and Engineering ..	1,761,800	10·6	3,397	15·3	1·45	2,283	5·5	0·52	5,680	8·9	0·84
7. Textiles	964,005	5·8	266	1·2	0·21	324	0·8	0·13	590	0·9	0·16
8. Clothing	777,767	4·7	2,566	11·6	2·48	926	2·2	0·47	3,492	5·5	1·17
9. Food, Drink, Tobacco	558,972	3·3	923	4·1	1·24	1,084	2·6	0·78	2,007	3·1	0·94
10. Woodworking, Furniture, etc. ..	238,803	1·4	288	1·3	0·93	398	0·9	0·68	686	1·0	0·74
11. Paper, Stationery, Printing ..	411,121	2·5	468	2·1	0·86	295	0·7	0·28	763	1·2	0·48
12. Miscellaneous (including Leather Industries)	298,090	1·8	459	2·1	1·14	307	0·7	0·42	766	1·2	0·67
Totals II ..	6,371,473	38·2	8,832	39·7	1·04	6,573	15·7	0·41	15,405	24·0	0·63
III. Service Industries											
Building and Contracting	846,793	5·1	992	4·5	0·89	1,894	4·5	0·89	2,886	4·5	0·89
Gas, Water, Electricity	209,707	1·2	358	1·6	1·28	356	0·8	0·68	714	1·1	0·89
Transport and Communications ..	1,152,028	6·9	1,990	8·9	1·30	1,651	4·0	0·57	3,641	5·7	0·84
Commerce and Finance‡	2,769,366	16·6	4,502	20·2	1·22	4,775	11·4	0·69	9,277	14·5	0·87
Public Administration	1,378,059	8·3	1,712	7·7	0·93	3,230	7·7	0·93	4,942	7·7	0·93
Professions	567,578	3·4	684	3·1	0·91	2,044	4·9	1·44	2,728	4·3	1·25
Entertainment and Sport	149,025	0·9	191	0·9	0·94	202	0·5	0·56	393	0·6	0·68
Personal Services (including Hotels and Catering)	2,245,716	13·4	2,701	12·1	0·90	8,989	21·5	1·60	11,690	18·2	1·35
Totals III ..	9,318,272	55·8	13,130	59·0	1·07	23,141	55·3	0·99	36,271	56·6	1·15
TOTAL IN ALL INDUSTRY ..	16,686,570	100	22,261	100		41,832	100		64,093	100	

*South Worcestershire. The area defined here as 'South Worcestershire' relates, as throughout, to Area III, shown in Fig. 5 in Ch. I.

†% of total locally divided by % of total for England and Wales, each percentage taken to several places of decimals.

‡Or Trade, including Distribution.

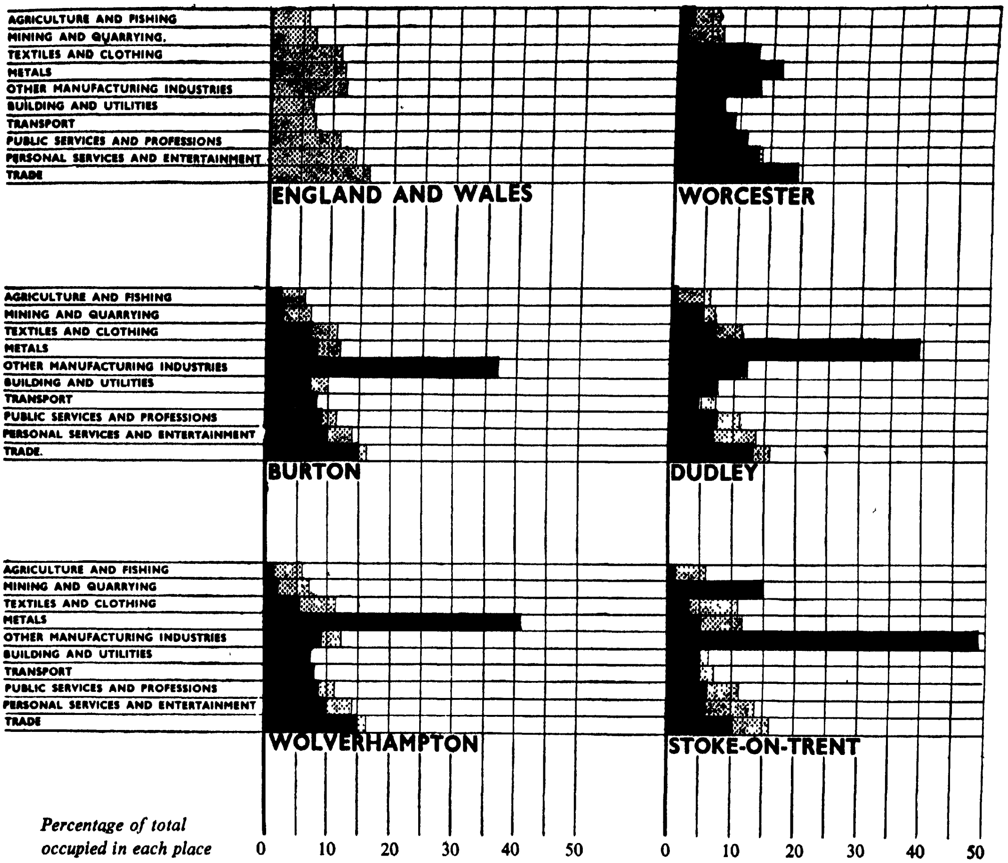

Fig. 11. INDUSTRIAL STRUCTURE OF WORCESTER AND OTHER WEST MIDLAND TOWNS COMPARED TO ENGLAND AND WALES

'Profile charts' superimpose red bars representing the local upon the national structure with its normal 'nose' and 'chin.' They show that whereas Burton and Stoke specialize extensively on 'other manufactures' (i.e. drink and pottery), and Dudley and Wolverhampton on metals, thus having elongated 'noses,' Worcester has much the same profile as the national economy except for agriculture and mining.

England and Wales, and in the Clothing industries 11·55% as against 4·65% for England and Wales. When the Clothing group is subdivided it is found that the glove industry had a high degree of localization in Worcester; the proportion employed in glovemaking in 1931 was 6·17% in Worcester and 0·715% in England and Wales, giving a location quotient in Worcester of 8·63.* The Metal group and the glove industry thus form 21·4% of the total employed in Worcester City, or 54% of the total in Mining and Manufacture. They will be considered in greater detail later.

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*6·17 ÷ 0·715 = 8·63. The location quotient is a convenient method of comparing the relative proportions in an industry in a particular area with the proportions employed in the same industry in a larger area, e.g. England and Wales. Where the location quotient of each industry in an area is 1·0, the industrial structure of the area corresponds to that of England and Wales (see footnote, p. 10).

Within the City area, the numbers engaged in Agriculture are naturally low (1·35%); in the rest of the southern area of the County, however, 29% of all employed were in 1931 employed in Agriculture as against 6% for England and Wales. The City's position as a 'service' centre for the surrounding rural districts is reflected by having higher proportions employed in Public Utilities, Transport, and Commerce and Finance than the average for England and Wales. The rural area the City serves is correspondingly low in these services, since the City renders the services for the area. The rest of south Worcestershire has, in fact, only 0·85% of its employed population in Gas, Water, and Electricity as against the City's 1·60%; only 3·95% in Transport and Communication as against the City's 8·95%; and only 11·4% in Commerce and Finance as against the City's 20·2%.

Distribution is the most important subdivision of Commerce and Finance. In a purely agricultural county such as Herefordshire, the six market towns are consistent in showing proportions employed in Distribution within the narrow range 20·1–22·4%. In Worcestershire, Evesham in the midst of an agricultural area shows a parallel proportion in Distribution of 20·6%. Worcester City has a lower proportion in Distribution, owing to its considerable industrial elements, but the proportion is still considerably higher than the national average—18·3% as against 14·4%—and marks Worcester's position as a market and shopping centre as well as an industrial city.

Taking south Worcestershire as a whole, the proportion engaged in most Service industries is less than the average for England and Wales, though more than in industrial areas. The Birmingham–Black Country area, as Table XI shows, has a proportion in Service industries of only 41·7%* compared with the south Worcestershire area's 56·6%. This area, however, has a proportion higher than even that of England and Wales in the Professions and the Personal Service group—accounted for by the abnormally high proportion employed in these groups (which include hotel and medical services) at the two Worcestershire health resorts. At Droitwich, Personal Service formed 30·2% and Professions 6·6% of the total employed population. At Malvern, the proportions were still higher, 33·0% and 13·8%. For England and Wales (as Table I shows) they were only 13·45% and 3·4%.

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*Information supplied by West Midland Group on Post-war Reconstruction and Planning. In the *Review of Economic Studies*, June 1940, Wensley and Florence give 44·8% as in Services (including Building) in the fourteen industrial districts they distinguish. In the eight mainly manufacturing and mining districts, the proportions range from 32·1% to 42·1%.

To sum up the findings of the 1931 Census, the City of Worcester in addition to its manufacturing activities acts as a service centre for the rest of the south Worcestershire area which has agriculture as its main activity. The particular services thus localized within the City are Public Utilities, Transport, and Commerce and Finance (which includes Distribution). Professional and Personal Services are localized at Droitwich and Malvern, and Worcester has lower proportions thus engaged than the south Worcestershire area. The proportions engaged in these Professional and Personal Services are, however, considerably higher in the City than in purely industrial areas such as Birmingham and the Black Country, namely 3·1% and 12·1% as against 2·3% and 7·9%.

§2. DEVELOPMENTS IN THE MANUFACTURING STRUCTURE OF THE AREA, 1931-8

THE industrial trends between 1931 and 1938 have been obtained by an analysis of figures relating to Insured Persons, as Census statistics relating to the numbers employed in the different industries are not available since 1931. These figures make it possible to compare the industrial trends within the area under survey with those that have taken place in Great Britain. A comparison of numbers and percentages, as between the three major groupings (I, Agriculture; II, Mining and Manufacturing; and III, Service Industries), is not possible on the basis of the statistics of Insured Persons, as changes in the insurance scheme brought in many classes, including Agriculture, by 1938 which were not included in 1931. Thus, for the analysis of industrial trends, the Mining and Manufacturing group has been extracted and given detailed consideration on its own.

Within the Mining and Manufacturing industries, the twelve major groups used throughout are the result of grouping together thirty-five sub-groups. These sub-groups were designed to bring together the numerous and different classifications used in the statistical analyses of Government Departments. The division of these twelve major groups into the thirty-five sub-groups is shown in Table II.

It is thus possible so far as Mining and Manufacturing are concerned to continue the analysis after 1931 year by year, using figures of insured population* in place of figures extracted from the decennial Census. A

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*Precautions must be taken to ensure comparability, since new groups of persons are continually included in insurance. The main group in this period was that of juveniles under 16 years of age. A number of juveniles has been allocated to each industrial group in 1931, so that the figures can be compared with those of 1938. For this purpose, the proportion of juveniles to adults in each group is taken to have been the same in each of the two years for the same area, and allowance is made for the difference between the age-composition of Worcester's labour force and that of Great Britain.

TABLE II

STANDARD GROUPING OF INDUSTRIES

(Mining and Manufacturing Industries Only)

Group	Name	Sub-groups
1	MINING	i. Mining and Quarrying ii. Treatment of Non-metalliferous Products
2	BRICKS, POTTERY, GLASS	i. Bricks, Unglazed Tiles, Fireclay Goods, etc. ii. Pottery iii. Glass
3	CHEMICALS AND ALLIED TRADES	i. Chemicals, Dyes, Drugs, Explosives ii. Soaps, Oils, Greases, Fats, Petroleum, Ink, etc. iii. Paints, Varnish, White Lead, etc.
4	GENERAL METALS	i. Earlier, Heavier, and Simpler Processes* ii. Secondary Processes and Products† iii. Non-ferrous Metals. Foundry and Wares
5	MECHANICAL ENGINEERING	i. General Engineering (Machines and Construction) ii. Vehicles iii. Shipbuilding and Repairing
6	ELECTRICAL ENGINEERING AND LIGHTER METAL PRODUCTS	i. Electrical Engineering and Contracting ii. Cutlery and Small Tools iii. Precious Metals and Jewellery
7	TEXTILES	i. Cotton ii. Woollen and Worsted iii. Other Textiles
8	CLOTHING	i. Tailoring, Dressmaking, Millinery ii. All other Clothes (including Gloves) iii. Boots, Shoes, Clogs, etc.
9	FOOD, DRINK, TOBACCO	i. Food ii. Drink iii. Tobacco
10	WOODWORK, FURNITURE, ETC.	i. Timber, Woodwork, Basket-ware ii. Furniture iii. Plastics
11	PAPER, STATIONERY, PRINTING	i. Papermaking ii. Paper Goods, Stationery, etc. iii. Printing, Bookbinding, Photography
12	MISCELLANEOUS	i. Preparation of Skin and Leather, Leather Goods, etc. ii. Rubber Manufacture iii. All other Manufacturing

Note. These Groups have been extracted from an Industrial 'Concordance' of Official Classifications compiled by the University of Birmingham and the West Midland Group for Post-war Reconstruction and Planning.

*Smelting, Refining, Rolling, Tinplate, Tubes, Wire, Iron Foundries, Forging.

†Mainly Iron and Steel. Boilers, Bolts, etc., Hollow-ware, Locks, Scales, Stoves, Tin Box, Sheet and Metal.

comparison of the percentage which each group forms of the total employed at the different dates illustrates the changes in industrial structure. These figures are used in Tables IIIA and IIIB, where the Engineering and Metal industries have been grouped together and the numbers and percentages of insured persons in the resultant ten groups of industries can be compared for 1931 and for 1938. Figures are given to show the industrial structure at these dates of Worcester City, the rest of south Worcestershire, and the total area (Area III), taken separately and compared with that of Great Britain. They present a picture of the Mining and Manufacturing structure, both for Great Britain and the south Worcestershire area comparable to that revealed in Table I, which was based on the more extensive figures of the Census.*

The most marked change in the industrial structure of the total area between 1931 and 1938 is the larger percentage engaged in Metals. This increase is apparently drawn from the Clothing and Food groups, and is shown to be centred in Worcester City. Here the percentage employed in Metals and Engineering rose from 41·2 in 1931 to 49·6 in 1938, while the proportion in the rest of the area actually declined from 28·2 to 21·8 over the same period. But since in the rest of the area the absolute figures are small, the increase in Metals and Engineering for the area *as a whole* is not greatly affected—there is still an increase from 38·3% to 43·7% of the Mining and Manufacturing total. In Great Britain, the proportion engaged in Metals and Engineering also shows an increase over the same period, though in a lesser degree than in the City of Worcester, and in this case at the expense of the Textile and Mining groups.

The percentage *increases* and *decreases* which took place from 1931 to 1938 within each of the ten groups of industries are shown in Table IV. Large percentage increases are shown for Worcester City in the first two groups (Mining and Quarrying; Bricks, Pottery, Glass) but are not very important if we consider the absolute figures. The decrease of 23·4% in the Clothing industry is important, especially when compared with a movement in the opposite direction for the whole country. But it is even more important than it appears. The national increase of 4·7% covers a large number of clothing industries, while the figures for Worcester refer to the highly localized glove industry—a localization referred to in discussing the 1931 Census data. The decline is also underestimated by the figures of insured persons in Tables IIIA and B, because of the large

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*The Census covers the whole occupied population as in Fig. 11, or (subtracting those out of work) the total number employed as in Table I; the numbers nationally insured include only manual wage-earners and others paid below a certain wage or salary. Moreover the insured are allocated to the place of work and the Census population to the place of residence. But since the area under survey is fairly self-contained and the figures are given only for the purposes of general comparison, the use of insured workers for continuing to calculate the industrial structure and changes over recent years is amply justified.

TABLE III

INSURED PERSONS IN MINING AND MANUFACTURING INDUSTRIES: A, 1931; B, 1938

(Great Britain, Worcester City, and South Worcestershire)

	Gt. Britain		Worcester		Rest of S. Worcs		Total S. Worcs	
A, 1931	Nos. in 1,000's	%	Nos.	%	Nos.	%	Nos.	%
1. Mining and Quarrying	1,250	16·4	34	0·3	211	7·5	245	1·9
2. Bricks, Pottery, Glass	229	3·0	511	5·0	66	2·3	577	4·5
3. Chemicals and Allied Trades	226	3·0	4	0	5	0·2	9	0·1
4. 5. 6. Metals and Engineering ..	2,287	30·0	4,168	41·2	793	28·2	4,961	38·3
7. Textiles	1,424	18·6	231	2·3	12	0·4	243	1·9
8. Clothing	554	7 2	2,537	25·1	258	9·1	2,795	21·6
9. Food, Drink, Tobacco	578	7·6	1,197	11·8	672	23·9	1,869	14·4
10. Woodworking, Furniture, etc. ..	247	3·2	425	4·2	225	8·0	650	5·0
11. Paper, Printing ..	454	6·0	470	4·6	131	4·6	601	4·6
12. Miscellaneous, incl. Leather Industries	381	5·0	552	5·5	444	15·8	996	7·7
Totals ..	7,630	100	10,129	100	2,817	100	12,946	100
B, 1938								
1. Mining and Quarrying	1,058	13·6	48	0·5	230	8·5	278	2·1
2. Bricks, Pottery, Glass	248	3·2	594	5·8	98	3·6	692	5·3
3. Chemicals and Allied Trades	258	3·3	3	0	3	0·1	6	0·1
4. 5. 6. Metals and Engineering ..	2,698	34·7	5,079	49·6	589	21·8	5,668	43·7
7. Textiles	1,129	14·5	420	4·1	3	0·1	423	3·3
8. Clothing	580	7·5	1,945	19·0	183	6·8	2,128	16·4
9. Food, Drink, Tobacco	620	8·0	1,018	9·9	727	26·8	1,745	13·5
10. Woodworking, Furniture, etc. ..	269	3·5	346	3·4	271	10·0	617	4·8
11. Paper, Printing ..	483	6·2	373	3·6	145	5·4	518	4·0
12. Miscellaneous, incl. Leather Industries	429	5·5	423	4·1	458	16·9	881	6·8
Totals ..	7,772	100	10,249	100	2,707	100	12,956	100

Note. An estimate has been made of juveniles aged 14–16 insured in 1931, to give true comparison with the 1938 official figures in which they were included.

numbers of outworkers employed in gloving who are not insurable under the national scheme. Assuming that the organization of the industry had remained the same, the percentage decrease would be accurately indicated in Table IV. But the decline probably applies to at least 1,000 persons more than are shown, since the proportion of outworkers to inworkers was reduced. A more detailed discussion of the various aspects of this decline is given later, when each group of industries is treated separately. The numbers employed in the Metal and Engineering industries increased by 21·9%, so that by 1938 almost half the workers engaged in Mining and Manufacturing, as Table IIIB shows, belonged to this particular group of industries. While Worcester increased in Metals and Engineering by 21·9%, Great Britain increased by 18%, showing that the expansion in Metals and Engineering was part of a national trend. This does not alter the fact that the expansion in Metals and the decline in the glove industry which took place in Worcester City upset to some extent the representative balance of industry which existed in 1931.

Within the southern area of Worcestershire, the concentration of industry is centred in Worcester City. Hitherto the industrial set-up has been covered only briefly by the analysis of official statistics. This will now be supplemented in more detail by a special Survey of the manufacturing concerns in the City.

§3. A SPECIAL SURVEY OF WORCESTER CITY MANUFACTURING UNDERTAKINGS, 1927–43

Of the total employed in Manufacturing industry, approximately 75% were in firms employing ten or more persons. Thus the trends within those firms will give an adequate picture of recent development in Worcester's industries.

As a preliminary step in this detailed examination, a questionnaire was issued to all such firms. The information asked for included the particulars of numbers employed in the period 1927–43, the location of the source of raw materials and markets; wartime changes and adaptation in technique, premises, and type of product; and particulars of methods of transport.

Of the total number of 107 questionnaires sent out, ninety-four were returned completed satisfactorily. Where reasons were given for non-completion, the most frequent were either that records had gone for salvage or that the business was merely a temporary wartime branch of a larger firm, and that particulars relating to it would not be of any concern to post-war planning of the City. The twelve firms for which

TABLE IV

CHANGES IN INSURED PERSONS IN MINING AND MANUFACTURING INDUSTRIES, 1931–8

Standard Grouping	Great Britain				Worcester City				Rest of South Worcestershire Area				Total South Worcestershire Area			
	Increase		Decrease		Increase		Decrease		Increase		Decrease		Increase		Decrease	
	Nos. in 1000's	%	Nos. in 1000's	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
1. Mining and Quarrying ..	—	—	192	15·4	14	41·2	—	—	19	9·0	—	—	33	13·5	—	—
2. Bricks, Pottery, Glass	19	8·3	—	—	83	16·3	—	—	32	48·5	—	—	115	20·0	—	—
3. Chemicals and Allied Trades ..	32	14·2	—	—	—	—	1	*	—	—	2	*	—	—	3	*
4. 5. 6. Metals and Engineering ..	411	18·0	—	—	911	21·9	—	—	—	—	204	25·7	707	14·2	—	—
7. Textiles	—	—	295	20·7	189	81·8	—	—	—	—	9	*	180	74·3	—	—
8. Clothing	26	4·7	—	—	—	—	592	23·4	—	—	75	29·1	—	—	667	23·8
9. Food, Drink, Tobacco	42	7·3	—	—	—	—	179	14·9	55	8·2	—	—	—	—	124	6·6
10. Woodworking, Furniture, etc. ..	22	8·9	—	—	—	—	79	18·6	46	20·4	—	—	—	—	33	5·1
11. Paper, Printing ..	29	6·4	—	—	—	—	97	20·6	14	10·7	—	—	—	—	83	13·8
12. Miscellaneous, incl. Leather Industries	48	12·6	—	—	—	—	129	23·4	14	3·2	—	—	—	—	115	11·5
NET INCREASE OR DECREASE	142	1·8	—	—	120	1·2	—	—	—	—	110	3·9	10	0·1	—	—

*Not significant.

the details were not obtained consist mainly of garages and other small undertakings and employed so few as not to affect the value of the results.

In many cases employment figures for the years 1927 and 1931 were unobtainable on account of the destruction of records. But where possible an estimate to fill in the gaps has been made, either from Ministry of Labour figures of insured persons or from Factory Inspector's returns. The same applies in the case of firms which were in existence in 1927 and 1931 but which have since gone out of production or for other reasons have failed to fill in the questionnaire.

For the purpose of tabulating the results, each firm has been classified according to its size in one or other of the twelve groups of industries described in Table II.

Table V gives the total numbers employed by the ninety-four larger firms between 1927 and 1943. Up to 1939, the changes illustrated on this table agree with those drawn from the total figures already given in Tables IIIA and IIIB, if we bear in mind that those figures applied to the workers insured in all firms, however small, and that the figures given here in Table V, while excluding the smaller firms, include the larger firms' uninsured outworkers in the glove industry. Table V brings the story almost up to the last of the war years. It had to omit the numbers employed in the Royal Ordnance Factory for security reasons, but even so it shows clearly the large wartime increase of employment in general metalworking and mechanical engineering.

The ninety-four larger firms plus the Royal Ordnance Factory are analysed in Table VII according to their size and their industry group. It is shown that though the number of firms employing over 500 has increased from one in 1931 and two in 1939 to nine in 1942, yet the number of relatively small or medium-size firms employing from 10 to 25, 26 to 50, and 51 to 150 workers has also grown between 1931 and 1942, respectively from 24 to 38, 13 to 16, and 16 to 19. This is important in preserving the social balance of the City. There is little danger of Worcester becoming monopolized by the interests of one single business organization.

The recent wartime changes in the extent and type of industrial employment disclosed by our special survey of the larger firms is worthy of further and more precise analysis.

An examination of Table V shows a wartime increase within these firms of 3,400 persons. This increase is made up of 1,754 workers released from other firms, plus a net increase of 1,646* to the labour force in these groups of industries in the City. This net increase is an increase over labour replacement of workers entering the Forces or leaving the City for other

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*12,224 – 10,578 in Table V totals.

TABLE V

NUMBER OF PERSONS IN FIRMS EMPLOYING 10 OR MORE IN WORCESTER CITY, 1927–43

Standard grouping	1927	1931	1939	1942	1943	Changes 1939–43
1. Mining and Quarrying	—	2	80	45	45	−35
2. Bricks, Pottery, Glass	469	405	537	589	666	+129
3. Chemicals, etc.	—	—	—	87	87	+87
4. General Metals	234	938	1,704	3,037	2,891	+2,751
5. Mechanical Engineering	1,518	1,964	4,360	5,803	5,915	
6. Electrical Engineering, etc.	61	93	83	93	92	
7. Textiles	150	148	211	90	88	−123
8. Clothing	3,456	3,250	2,362	950	1,026	−1,336
(including Gloves:						
Inworkers	1,658		883		418	
Outworkers)	1,038		709		360	
9. Food and Drink	361	405	447	343	339	−108
10. Woodworking, etc.	160	181	229	282	279	+50
11. Paper, Printing	261	263	304	211	152	−152
12. Miscellaneous						
Tanneries	196	186	219	124	150	+383
Others	—	32	42	459	494	
TOTALS	6,866	7,867	10,578	12,113	12,224	+3,400 −1,754

TABLE VI

DATES OF ESTABLISHMENT OF EXISTING FIRMS: WORCESTER CITY

Standard grouping	No. of Firms*	No. of Answers	No. of firms established				
			Before 1800	1800–50	1850–1900	1900–30	1930–44
1. Mining and Quarrying	2	—	—	—	—	—	—
2. Bricks, Pottery, Glass..	2	2	1	—	—	—	1
3. Chemicals, etc... ..	2	—	—	—	—	—	—
4. Metalworking (Sheets, Tubes, etc.)	13	11	—	—	3	4	4
5. Engineering	26	14	—	—	1	6	7
6. Electrical Engineering, etc.	1	1	—	—	—	1	—
7. Textiles	2	2	—	—	2	—	—
8. Clothing (including Gloves)	16	9	2	—	3	1	3
9. Food, Drink	11	7	1	—	4	1	1
10. Woodworking, etc. ..	5	5	—	—	1	3	1
11. Paper, Printing ..	6	3	1	—	2	—	—
12. Tanneries, etc. ..	8	6	—	—	3	1	2
TOTAL ..	94	60	5	—	19	17	19

*The firms included in this column are those employing ten or more persons, to whom the Questionnaire was sent.

TABLE VII

ANALYSIS BY SIZE OF THE NUMBER OF FIRMS EMPLOYING 10 OR MORE PERSONS— 1931, 1939, 1942: WORCESTER CITY

No. of Persons employed per firm	10–25			26–50			51–150			151–250			251–500			501–1,000			1,000+			Totals		
YEAR	1931	1939	1942	1931	1939	1942	1931	1939	1942	1931	1939	1942	1931	1939	1942	1931	1939	1942	1931	1939	1942	1931	1939	1942
1. Mining and Quarrying ..	—	1	1	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
2. Bricks, Pottery, Glass ..	—	1	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	1	—	—	—	1	2	1
3. Chemicals and Allied Trades	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
4. General Metals	1	1	2	2	1	3	1	2	2	2	4	1	1	2	3	—	—	2	—	—	—	7	10	13
5. Mechanical Engineering	9	9	10	1	3	2	2	4	4	4	2	3	2	4	3	—	2	5	—	—	1	18	24	28
6. Electrical Engineering and Lighter Metal Products	—	—	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1
7. Textiles ..	—	—	—	1	—	1	1	1	1	—	1	—	—	—	—	—	—	—	—	—	—	2	2	2
8. Clothing ..	5	5	7	2	3	4	2	3	4	2	3	1	2	2	—	1	—	—	—	—	—	14	16	16
9. Food, Drink, Tobacco ..	4	5	5	3	2	4	3	4	2	—	—	—	—	—	—	—	—	—	—	—	—	10	11	11
10. Woodwork Furniture, Plastics ..	2	2	3	—	1	—	2	2	1	—	—	1	—	—	—	—	—	—	—	—	—	4	5	5
11. Paper, Stationery, Printing ..	—	—	4	4	2	—	1	3	2	—	—	—	—	—	—	—	—	—	—	—	—	5	5	6
12. Miscellaneous	3	3	6	—	—	—	3	3	1	—	—	—	—	—	1	—	—	—	—	—	—	6	6	8
TOTAL NO. OF FIRMS	24	27	38	13	13	16	16	23	19	8	10	6	6	9	7	1	2	8	—	—	1	68	84	95

reasons. Decreases occurred in the Textile, Printing, Food, and Drink groups, but mainly in the glove and other clothing industries, which have suffered a decrease of 1,336, equal to more than 50% of their pre-war labour force. The increases have been concentrated in the Metal and Engineering industries. Here the increase has amounted to 2,751, or 45% of the 1939 figure (excluding consideration of the Royal Ordnance Factory). It has been brought about by an expansion of almost 2,000 in the pre-war firms and by the addition of new firms to the extent of approximately 800 workers.

The smaller increases since 1939 have been in the pottery industry, caused by an adaptation of product to purely wartime needs; in the Chemicals group by the introduction of two branches of national concerns, each employing fewer than sixty persons; and in the Miscellaneous group by the establishment of a large new firm in the district, making specialized ancillaries for the Electrical and Engineering trades.

Table VI gives an analysis of the dates of establishment of the sixty firms which gave complete answers. It shows that the Pottery, Food, and Clothing (glove) trades for which Worcester is renowned are represented by the firms oldest established. None of the firms included in the sixty were established between 1800 and 1850. Since 1900, however, there have been eight new firms in the Metal grouping and thirteen in Engineering. With the exception of one old-established engineering firm and the one porcelain factory, the largest concerns in the City are among these new firms.

To sum up. Our information is adequate to show the general developments up to the war, and the changes that took place during the war. The changes over the whole period under study are simple to understand. Firstly, there has been a big increase in the number employed in manufacturing industry (an increase of 80% in the period 1927–43). Secondly, as between manufactures, the switch in importance measured by the numbers employed has been from Clothing and Food towards Metals and Engineering.

Such a change may be accepted as more or less inevitable in view of the greater mechanisation of industry taking place in the country as a whole, and in view of Worcester's proximity to the metal-working area around Birmingham. Nevertheless, some types of Metal or Engineering concerns are more suitable for location in a county town than others, and discrimination between the various types will be made throughout this Survey. The demand for and training of particular classes of metal-workers will have its repercussions upon other aspects of life in the town. It is possible that some light engineering industries would provide employment for girls thrown out of work by the decline in the glove industry. On the other hand, competition for female labour from new engineering firms may have been one of the contributing factors in this decline, and any plan to arrest it would have to take into consideration the expected labour demands of new firms coming into the area.

§4. POINTS ARISING FROM THE SURVEY

In the present section some important details about Worcester's manufacturing industry will be presented with practical planning points in mind.

Table IV, Chap. I, and Table I in this chapter show that the standard groups of manufacturing industries, in which the Worcester area appears both absolutely or relatively important as measured by a large number of workers or a location quotient* well above unity, are (2) Bricks, Pottery, Glass; (4, 5, 6) Metals and Engineering; (8) Clothing; (9) Food, Drink, Tobacco; (10) Woodworking and Furniture, and (12) Miscellaneous. The specific industrial products within these groups in which Worcester specialized were brought out by the questionnaire issued to all firms employing over ten workers. They were as follows:

Standard Industry Group	
(2)	Porcelain
(4), (5), (6)	Sheet Metal (especially for food canning and casements) General Engineering (including mining machinery, parts, and components)
(8)	Gloves
(9)	Sauces, Vinegar, Flour
(10)	Woodworking, Furniture, and Builders' Joinery
(12)	Tanneries

The information obtained from individual firms brings out a number of points of general significance to planning. Of importance to the location of industry is the established local reputation of certain industries, the possibility of manufacturing from a variety of materials and for a variety of markets at some distance away, and the natural development of certain residentiary industries. The need for industrial training was also brought out, and some indication was obtained of immediate post-war prospects.

The importance of reputation is clear in the case of the glovemaking industry, to which a separate section is devoted. It is also important in the making of vinegar, sauce, mayonnaise, etc., products specially associated with Worcester, and in the case of the Royal Porcelain Works. The porcelain works, two glovemaking firms, one sauce maker, together with a printing works, make up the five firms shown in Table VI as founded before 1800.

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*See note, p. 10.

The long distances from which some materials of Worcester's industry may come and to which some of its products may go is a clear indication of the industrial possibilities of a city in spite of its position, which is neither at the exact source of raw material nor yet at the centre of a market. It is sufficient that Worcester is *reasonably* near or accessible to such materials and markets, thanks to its rail, road, and water communications. The materials for the metal-box industry are the tinplates made in South Wales; its markets are the canning factories in the food-producing areas of the West Midlands and other accessible areas. Much of the materials for tanning come from India and Africa shipped via Liverpool and Avonmouth, and the markets are not only the City's own glove industry but the shoe industry of Leicester and Northampton. The porcelain industry is a more complex example. Its possible market is world wide; its materials fairly scattered. The main materials are clay, felspar, and fireclay. The clay is brought from Devon or Cornwall, felspar from Norway, and fireclay from south Staffordshire and Scotland. Coal for firing the kilns comes from South Wales, Staffordshire, and Nottinghamshire; drawn from all these areas since varieties have to be used depending on the types of clay and the temperature required in the kiln for different products.

Many manufacturing industries can thus be carried on at some distance from materials, fuel, and markets. But other manufacturing industries are not so 'footloose' and require to reside where their products or services are consumed. Examples of these 'residentiary' industries found among the Worcester firms include jobbing and newspaper printing works, clothing (especially dressmaking and millinery), electrical wiring, brewers and bottlers, and confectioners.

Training for skilled jobs was shown to be particularly important in the older porcelain industry, and also in the newer general engineering industries, where firms moving into Worcester could not rely on an established pool of skilled labour, and there was in some branches (e.g. machine tools) trained labour moving out. Some of this training could, it was said, be conducted inside the factory, but for other parts of the training many firms looked to public agencies, thus demonstrating the practical value of city technical schools. One firm of general engineers, indeed, looked to have a permanent group of two hundred apprentices receiving technical education outside the factory. Training for industry should not be confined, however, to the acquisition of manual skill and engineering knowledge. For a successful export trade, and in the new world of applied science and of workers' standards of living reaching out for new products at a reasonable price, skill and knowledge in design and management are equally important to acquire.

The issue that is of most immediate importance for the purpose of planning the industrial future of any area is the trend of the market for its existing industries. Will the products made before the war be needed by the post-war world to a less or to a greater extent? If there are likely to be changes in demand, can the processes and equipment of existing factories be modified or converted from pre-war and war uses to meet those changes?

The first step in answering these questions is to draw a distinction between the immediate post-war period of rehabilitation and the later reconstruction. Rehabilitation involves the rebuilding of damaged or destroyed premises and replacement of durable goods where purchase had to be postponed during the war. In this stage it is the industries making productive equipment and consumers' durable goods that will find an eager market—and the more durable (and therefore postponable during the war) the more demand will have heaped up.

In this rehabilitation period, Worcester's industries have little to fear. Though so many of its factories were until recently engaged in meeting the demands of war, few of them (with the exception of the Royal Ordnance Factory) specialized on the finished product such as assembling the complete aircraft. They were engaged on components and parts, such as tubes, which with modifications can probably be converted into the components and parts of durable goods required in greater quantities to meet accumulated peacetime demands. Sheet-metal products and casements may in particular be required for the final product perhaps in most immediate demand, namely houses, particularly if houses are prefabricated.

In the later, reconstruction period, the demand for durable goods will drop back into line with that for consumers' perishable or short-lived goods. Here again Worcester is not lacking in reserves. Gloves and porcelain are short-lived durable goods in which demand for replacement is fairly stable. But more stable yet in demand are the more or less quickly perishable foodstuffs. Though progress in applied science is making foodstuffs less perishable by means of canning, pickling, etc. (and here Worcester is in the forefront), yet limited larder space makes the purchase of foodstuffs comparatively stable even when canned.

Thus, like a sound banker who collects bills of varying maturity in his portfolio, Worcester seems to possess a collection of industries meeting demands that are likely to be fairly well distributed during the period of post-war readjustments.

§ 5. THE STATE OF THE WORCESTER GLOVE INDUSTRY

The period since 1927 has been one of decline for the Worcester glove industry. With about two exceptions, decline applies to each of the firms in the industry. It is true that there was a national decline, but the *share* of Worcester also declined. New firms were starting up elsewhere; and just before the outbreak of war, new firms even came to Worcester. Not all of these firms succeeded, however. Several unsuccessful businesses were started in Oxford, Worcester, and elsewhere, though in this respect gloving was not very different from other industries.

One would not expect new firms to be attracted to a declining industry in old centres; old factories in the industry which had hitherto been localized to benefit from peculiar local advantages might well suffer in competition with successful factories in new centres when modern methods of production had reduced the attraction of the older centres. It is recognized that the manufacture of leather, the raw material of gloves, requires water of a particular quality. Centres such as Worcester or Yeovil enjoyed this advantage, and it was to be expected that the art of glove manufacturing should be established there, and when already established should grow to take advantage of the raw material and a labour force skilled in the handling of leather. Modern chemistry and changes in the methods of dressing cancelled out the natural advantages of Worcester for the leather trade, and possibly reduced its attractiveness as a gloving centre. But two important points have to be borne in mind. The first is that although Worcester probably had scores of leather-yards of one sort or another a hundred years ago, it is doubtful whether more than three or four important ones catered for the gloving industry, and in any case the output of the gloving leather dressers remaining today is probably greater than that of all the yards which existed in 1850. Secondly, modern developments which have allowed other centres to compete with Worcester in the art of dressing skins have also cheapened transport and made it possible for Worcester to enjoy wider markets for its products and to draw its raw materials from any other centre better favoured under the new conditions to produce them. In any case, the technique of producing gloves, as opposed to that of leather production, has changed but little, and Worcester still possesses two factors of the highest importance to the industry: a highly skilled labour force and a world-wide reputation for the excellence of its products.

In spite of these advantages, Worcester has failed to attract many new firms, and has suffered a decline in the old-established firms. The four largest firms probably employed 1,450 internal workers in 1927, but by the outbreak of war they had lost at least 250–300 workers. This decline is of long standing and occurred throughout the country during the last century. In 1922 the number of workers in the Worcester area was about 2,300 out of 11,000 in the whole industry (including outworkers). There was a temporary revival following the adoption of a protective policy by the Government in 1925, after which the decline continued. Since then it is difficult to say how the position in Worcester has changed in relation to each of the other gloving centres, but certainly the total employed in the Worcester firms has declined.

Some lead in the trade was still maintained by Worcester up to the war, in that new firms in other centres still sent gloves to Worcester to be cut. The same train of events has occurred in connection with the gloving centre of Yeovil, a town with development similar to that of Worcester. In this case, at least one Manchester firm and others from Walsall and Belper send their vans each week into Somerset to distribute and collect outwork from people in the villages around Yeovil, who are already used to that sort of work. Such facts suggest that there should have been advantages from an expansion of the glove industry in the old centres. But in fact, as stated, the numbers employed in Worcester have fallen and the numbers employed in Yeovil remained steady for the ten years before the war; while the numbers in small centres such as Westbury or Martock (more or less attached to the main Yeovil centre), as well as in the industrial areas at Walsall and Manchester, have increased.

The expansion in these new centres is partly accounted for by the obvious advantage of a plentiful supply of female labour in the country areas of the west of England; in the case of Walsall and Manchester there were other industries which could easily be adapted to glovemaking.

On the other hand, the main factors accounting for the decline in Worcester seem to have been those which ought to have been Worcester's greatest asset, i.e. skilled labour force and a good reputation.

The recognized high quality of Worcester's gloves has been built upon the skill of the City craftsmen. It is natural that such a labour force should have become well organized to prevent new firms undercutting its reputation or wage rates, especially in an industry which requires so little capital equipment that anyone with a few hundred pounds capital could start up and 'cash in' upon the established skill and good name of the City. This organization led to a raising of piece-rates above those obtainable in other gloving centres. For example, the piece-rates for cutting gloves were 5s. per dozen in Worcester, when they were 4s. in Yeovil and less in Manchester and other centres. But in spite of this, the earnings of Worcester cutters were lower than those of cutters in Yeovil, Manchester, Walsall, and other centres. This is partly due to the higher quality and therefore slower output of their work, partly to short-time working, and partly to the internal organization of the factories.

This experience of Worcester glovers earning less than those elsewhere has led to the adoption of a restrictive policy. The Unions are unwilling to admit more than the minimum of apprentices to the trade, since they themselves so frequently suffered low earnings and unemployment. Such a policy could only result in the Worcester manufacturers using labour in areas not so well organized. At the same time they have kept on their Worcester factories for the sake of the reputation, in spite of the high labour cost. As this development continued, the Worcester glove factories of some firms merely became relatively unimportant units in large selling and factoring organizations. Finished gloves, partly made gloves, or leather at one stage or another of its manufacture were bought from all over this country and Europe and sold under the names of Worcester firms. At a later stage it became necessary, for commercial reasons, directly to control such subsidiary undertakings, and so in many cases they were bought out by Worcester firms. So far as these firms are concerned, the position is not so much that the Worcester firms are declining but that the Worcester factory of each group is losing in competition with other factories within the same organization. High piece-rates and general opposition from labour in Worcester are quoted universally by employers as the explanation.

The answer from the craftsmen's side can be summed up as follows:

Worcester craftsmen are highly skilled and well organized and therefore expect the best possible return for their labour. They have suffered short time and unemployment, both from Continental firms sending gloves into England and from their own firms getting all or part of the job done abroad at cheaper labour rates, and selling the final article under the names of Worcester firms—names which were originally founded on a skill which the men are no longer allowed to exercise. In such a situation they cannot afford to suffer competition from more apprentices, nor are they anxious for their sons to be tied to a declining trade.

The reputation and organization of Worcester firms was built up at a time when the fashions in gloves were different from those favoured at present. This is true particularly of women's gloves. The sort of woman's glove demanded a generation ago was of particular quality and fitting, and perhaps took several minutes to put on. Fashion, however, has developed along the same lines as tailoring—towards a mass-produced and more easily fitted garment. The simpler article now demanded ought to allow a simplification in manufacturing organization, and it is the claim of labour that some Worcester firms by maintaining an obsolete organization prevent the workers from obtaining earnings as high as in other centres, in spite of the higher piece-rates. The forces making for a decline, on the production side at least, can be summed up in the apparent contradiction of high labour costs and yet low total earnings, leading to emigration and restriction on apprentices. Any remedy must, of course, resolve this deadlock.

Because of the high proportion of labour to capital employed, gloving depends more than most industries on the quality of its staff, both operative and supervisory. A labour force and staff trained not only in the skill of a specialist job but capable of initiating alterations in organization, workshop practice, and design, would not only improve the position of those existing firms which are not too stratified to change, but would attract new firms to Worcester.

Pre-apprentice training could be taken in the last year or two years at technical schools or in practical classes at senior schools. On entering industry, since juvenile employees will have to be released part-time under the new Education Act, it would be possible to continue their formal education, giving them not only a knowledge of glovemaking wider than that gained from their own experience, but also a knowledge of ancillary and supplementary trades, such as tanning leather, dyeing, etc. With such an advantage to offer to industry the education authority could demand in return a guaranteed number of places in industry per year and a course of workshop training and practice complementary to that given in schools. Similar sorts of arrangements have been made between the local trades and the education authority (notably in Leicester), with advantage both to the trades concerned and to the workpeople. In this case the college also acts as a leader in design, and even accepts commissions from the trades for which it caters. Part of the training of students is done on jobs which are productive and as profitable to the school as they would be to a factory. Whether any of the processes of glovemaking could be treated in this way would depend upon the organization and equipment of the school. The effect is not to exploit technical-school students as cheap labour, but to enable them to have that repetitive practice which is necessary to the attainment of manual skill, under very skilled supervision and removed from pressing demand for maintaining piece-rate earnings.

It is well known in this as in other trades where apprentices are usually attached to a particular craftsman, that the youth turns out to be the same as his teacher. Any new technique must be taught from outside, or at least from the most advanced workers in the trade. And since by tradition it is almost impossible for the Worcester gloving industry to be revived by turning over to a very cheaply made product, the solution seems to lie in a retraining of its personnel and through them a reorganization of its factories.

That there does still exist a demand for the high-quality type of glove is proved by the success of two firms in Worcester making such gloves for export. The good labour relations in the same two firms also points to the efficiency of their organization and the correspondingly high earnings of their workers. Failing a similar improvement in relations with other firms, Worcester will not only continue to lose its best craftsmen to other centres, but will also lose an industry which, desirable in itself, reduces the extent to which Worcester will be dependent upon a dominating industry of engineering.

§6. THE RISE OF THE METAL INDUSTRIES

THE Metals and Engineering group of industries employed, according to Table I (summarizing the Census of 1931), as high a proportion as 15·3% of the employed population of the City of Worcester. This group, as shown by Tables IIIA and IIIB, formed in 1931 41·2% of the City's insured workers in Mining and Manufacturing and 49·6% in 1938—an increase between those years (as Table IV shows) of 21·9% in the numbers employed. Clearly the industrial future of Worcester is closely bound up with these metal industries, and the group requires detailed consideration in planning for future development.

The standard grouping of industries given in Table II shows three groups of metal industries numbered 4, 5, and 6, each with three sub-groups (i), (ii), and (iii). In Group 6, Table VII shows that among these main sub-groups Worcester had only one firm employing ten or more persons. This was in sub-group 6 (i) (Electrical Engineering), and, as already mentioned, this one firm was engaged in local electrical installation and contracting. There were no firms at all in the other two sub-groups, i.e. Cutlery and Small Tools (6 (ii)) or Jewellery and Precious Metals (6 (iii)). In Group 4 (General Metals) the thirteen firms shown in Table VII as existing in 1942 were scattered among all three sub-groups, and in Group 5 (Mechanical Engineering) sub-groups (i) (General Engineering—mainly machine-making) and (ii) (Vehicles) were represented in Worcester, but not sub-group (iii) (Shipbuilding). In short, out of nine metal industry sub-groups, five are represented in Worcester.

Details of the particular industries included in these groups that were important to Worcester in 1938 and are likely to be important to future plans in the City are given in Table VIII, drawn from returns of the insured population. The seven tabled industries account for practically all persons insured in metal and engineering manufactures in Worcester. 'Manufacturing,' of course, excludes electrical wiring and contracting. The first five columns present the numbers employed in these industries in total and divided by age and sex. From these columns, the ratio of juveniles (14–16) and of women to total employed is worked out. These ratios are important, since for full employment the local opportunities of

TABLE VIII

GROWTH AND FLUCTUATIONS IN WORCESTER METAL INDUSTRIES

Measured by persons insured in 1938

INDUSTRY WITHIN GROUP	NUMBERS INSURED WORCESTER CITY					COMPARATIVE RATIOS				GROWTH OR DECLINE Insured 1923–38 GB & NI† adults	FLUCTUATIONS IN TOTAL EMPLOYED	
						Juveniles to total		Women and Girls to total			Peak of seasonal GB & NI† adults	Depth of cyclical 1932* GB & NI† adults
	Total	Men	Boys 14–16	Women	Girls 14–16	City	GB and NI†	City	GB and NI†			
Group 4 (*i*) Early Process, Brass, etc. ..	282	219	63	—	—	22%	3%	0%	8%	+25·0%	None	24%
Group 4 (*ii*) Stove, etc., and Foundry ..	296	280	12	4	—	4%	5%	1%	10%	+27·3%	None	19%
Bolts, Screws, etc.	76	31	1	33	11	16%	9%	58%	44%	−0·9%	None	2%
Miscellaneous Metal Industries	1,474	748	101	542	83	13%	8%	42%	35%	+66·2%	Slight Winter to Spring	20%
Group 4 (*iii*) Brass Wares	77	47	17	10	3	26%	6%	17%	40%	−8·7%	Slight Winter to Spring	21%
Group 5 (*i*) General Engineering ..	2,341	1,956	226	134	25	11%	5%	7%	9%	−0·2%	Slight mid-year	21%
Group 5 (*ii*) Motors, Cycles, Aircraft and parts	296	250	13	30	3	5%	5%	11%	10%	+104·6%	Strong Spring	20%
ALL INDUSTRIES	23,271	15,258	1,134	5,797	1,082	10%	6%	29%	28%	+24·6%	Slight Spring	9%

*Compared to average of 1929 and 1935. †Great Britain and Northern Ireland.

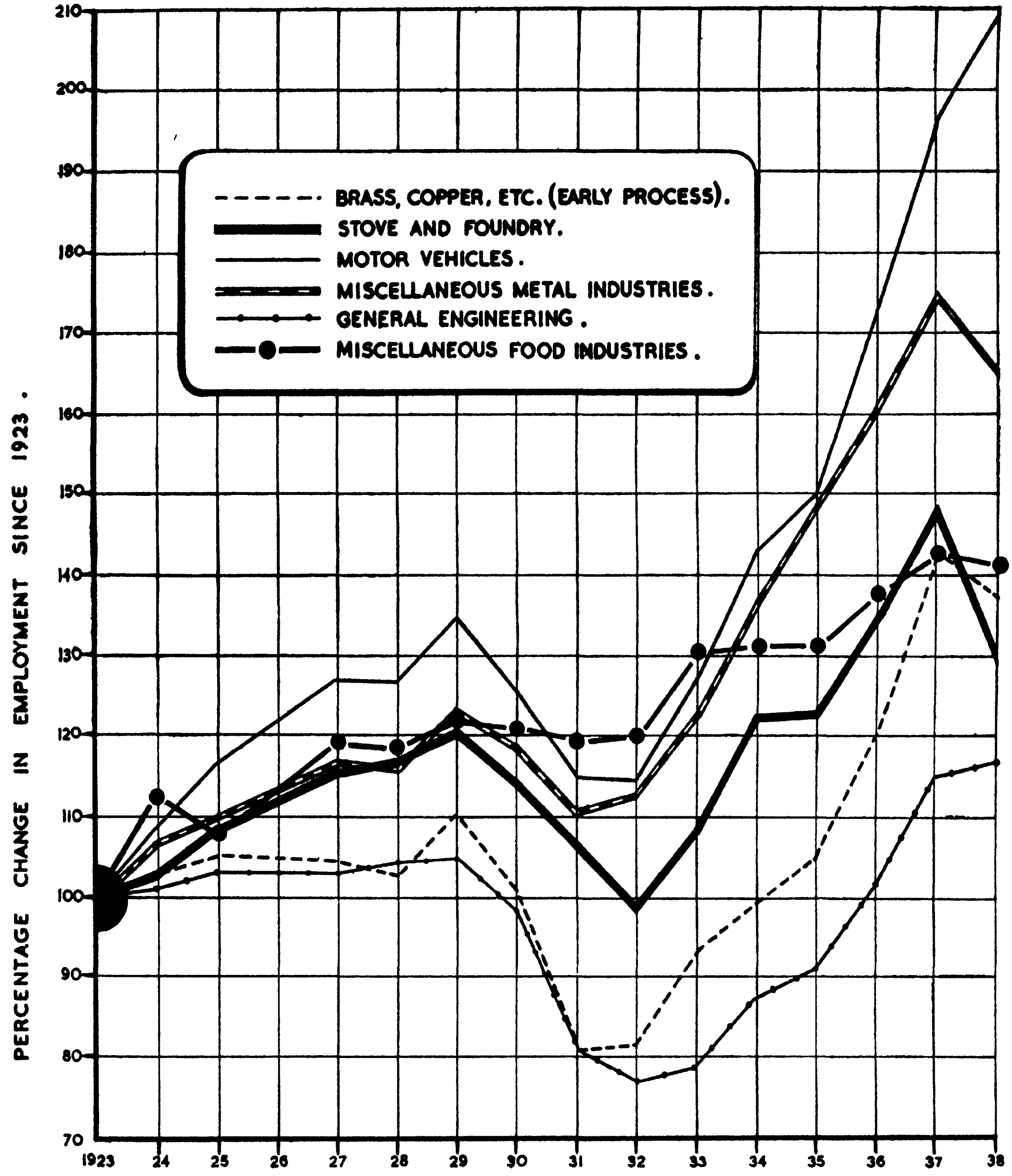

Fig. 12. *Growth and Fluctuation of Employment in Specified Metal Industries since* 1923 (= 100) *compared to Food Industries in Great Britain. Employment on Food Products shows relative stability. In spite of the depression,* 20% *more are employed in* 1930–2 *than in* 1923.

work offered to women and young persons should match the proportions willing and suitable for work within the total population.

This table brings out five salient sets of fact:

1. For all industry and most metal industries Worcester employs a much higher proportion of juveniles to adults than England and Wales as a whole.

2. For the total of all industries the proportion of women employed is similar in Worcester to England and Wales.

3. Several industries found at Worcester of the metalworking type (as against engineering or vehicles and their parts) offer wide scope for women's employment.

4. The majority of the metal industries found at Worcester were expanding rapidly throughout the country before the war, and with the exception of motor-cars, were not subject to seasonal fluctuations.

5. The most serious problem in the metal industries of the type found at Worcester was their liability to deep cyclical depressions, all at the same time. New developments in Worcester within this type of industry might therefore lead to considerable instability. The percentages given in the last column are based on the only trade cycle measurable since the last war; but the less accurate data obtainable before 1914 all point to the same cyclical instability of metal or engineering trades.

Fig. 12 brings out this simultaneous fall in employment in metal industries by means of graphic curves. In all industries, employment of insured persons in the year 1923 is given as 100 and employment in subsequent years expressed as a percentage of that of 1923. The depth of the dip in employment for 1932 compared to the 1929–35 level (given in figures in Table VIII) is clearly seen. By contrast, a curve is given for a group of miscellaneous food industries. Here the stability through 1929–35 is so marked that the curve is almost a straight line.

The question how to meet the problem of cyclical employment in Worcester's new metal industries will be taken up in the final section of this chapter. Clearly the development of comparatively stable industries such as the manufacture of foods is not unconnected with the solution. But before final solutions can be put forward, Worcester's general position in regard to unemployment and other problems of labour must be investigated, for the final purpose of any industrial plan must be the fullest possible employment at the highest possible standard of living and working.

§7. UNEMPLOYMENT AND OTHER PROBLEMS OF LABOUR

(*a*) UNEMPLOYMENT, 1931–9

ONE of the main objects of planning industrial location is to obtain full employment. Sir William Beveridge in his *Full Employment in a Free Society* and the Government White Paper on Employment Policy both put industrial location in the forefront of practical measures. Beveridge cites the Controlled Location of Industry as the second condition of full employment.* In the White Paper the Government 'proposes to attack the problems of local unemployment in three ways,' of which 'so influencing the location of new enterprises as to diversify the industrial composition of areas which are particularly vulnerable to unemployment' is the first.

The discussion of the history and prospects of particular groups of Worcester industries in the preceding sections has prepared the way for a general consideration of the employment situation and trend in Worcester prior to the outbreak of the war. Table IX, illustrated in Fig. 13, gives the unemployment rate of men and of women and of all persons (including juveniles) compared to the comparable national rates of unemployment. The period covered is as wide as from 1931 to 1939, and rates are given in each year for four separate months representing the four seasons, in order to show the seasonal fluctuations. Four noteworthy conclusions emerge from this table:

1. Worcester throughout the eight years before the war had a lower rate of unemployment for men than Great Britain. For women the unemployment rate in Worcester was also lower than the national level from 1931 to early 1938. This *relatively* low level of unemployment is evident from the facts given in Table IX and from the curves in Fig. 13. In no single month between 1931 and 1939 does the Worcester unemployment rate for all persons appear to exceed the national rate. Indeed, in the key months appearing in the table the Worcester rate for all persons (apart from one exception—October 1938) was always 2·3 or more points below the national rate. This comparatively low rate of unemployment was probably due to the balanced economic structure of Worcester compared, for instance, to the Welsh, the North-eastern, and the Scottish regions—overbalanced in coal and iron and steel; and the North-western region—overbalanced in textiles. Taking the average unemployment rate over the years 1931–6, the Welsh regional rate was 82% higher than that of Great Britain, the North-eastern 31% higher, the Scottish 33% higher, and the North-western 26% higher. These levels of unemployment

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*Op. cit., Pt. IV.

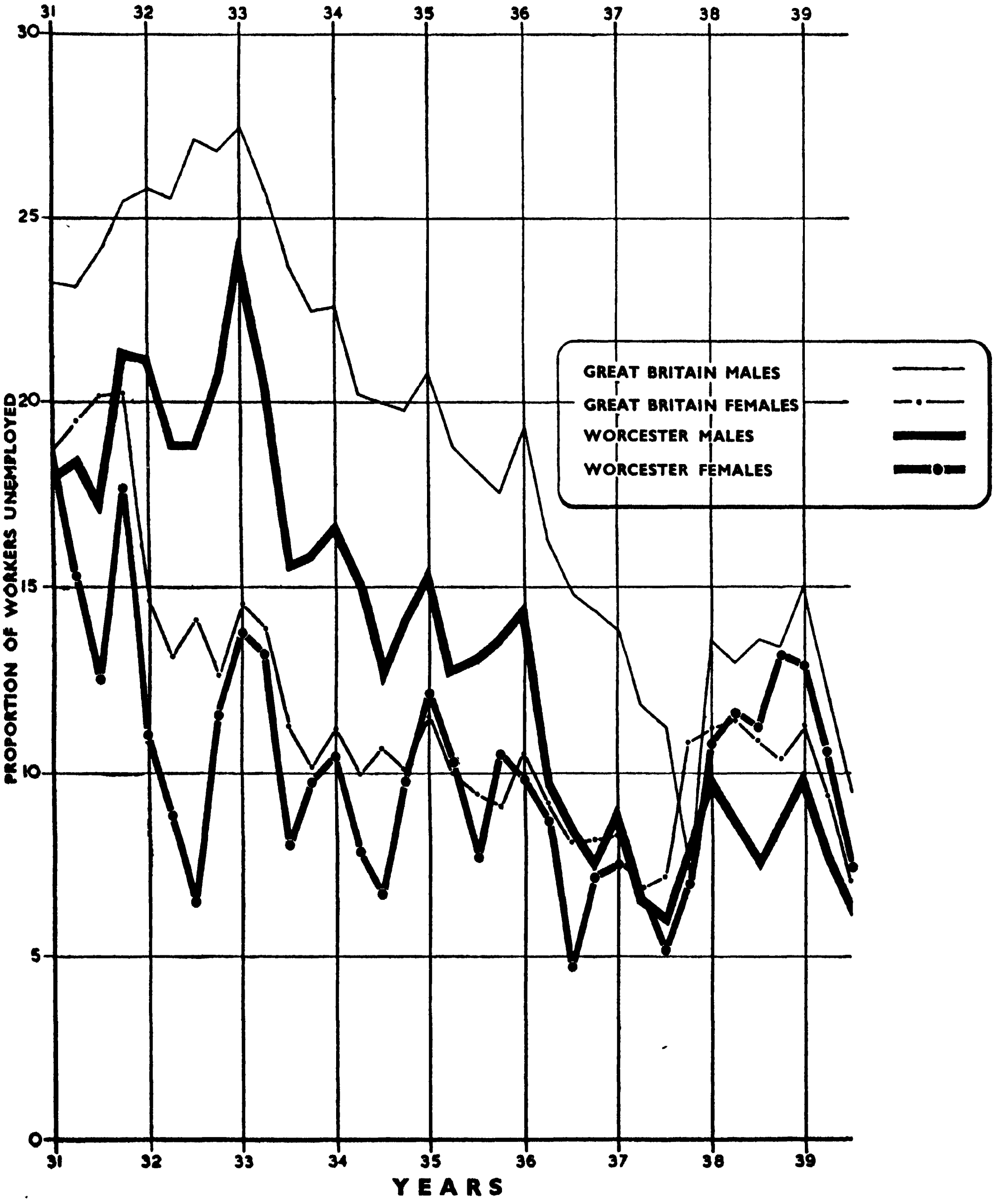

Fig. 13. *Percentage Unemployed in Worcester and Great Britain* (1931–9), *illustrating Table IX. The seasonal fluctuations in Worcester are repeated fairly regularly each year.*

TABLE IX

RATES OF EMPLOYMENT, 1931–9: WORCESTER AND GREAT BRITAIN

(Ministry of Labour's Local Unemployment Index)

		Worcester			Great Britain		
		Male	Female	Total, inc. juveniles	Male	Female	Total, inc. juveniles
1931	Jan.	18·0	18·7	16·6	23·4	20·9	22·0
	April	18·4	15·3	16·0	23·1	19·6	21·3
	July	17·1	12·5	14·2	24·1	20·2	22·0
	Oct.	21·3	17·7	18·5	25·4	20·3	23·1
1932	Jan.	21·1	11·0	17·1	25·8	14·7	22·1
	April	18·8	8·9	15·1	25·6	13·1	21·5
	July	18·8	6·5	14·3	27·1	14·1	22·7
	Oct.	20·7	11·6	17·0	26·9	12·7	22·2
1933	Jan.	24·1	13·8	20·2	27·5	14·6	23·4
	April	20·6	13·2	17·5	25·6	13·8	21·8
	July	15·6	8·0	12·6	23·7	11·4	19·7
	Oct.	16·1	9·8	13·3	22·5	10·1	18·5
1934	Jan.	16·6	10·7	13·5	22·6	11·2	19·2
	April	15·1	7·9	11·8	20·2	10·0	17·2
	July	12·5	6·6	9·7	20·0	10·6	17·0
	Oct.	14·0	9·9	11·5	19·8	10·2	17·0
1935	Jan.	15·4	12·2	13·4	20·9	11·8	18·5
	April	12·9	10·2	11·0	18·8	10·0	16·3
	July	13·0	7·6	10·4	18·2	9·4	15·7
	Oct.	13·5	10·5	11·5	17·6	9·1	15·3
1936	Jan.	14·4	9·9	12·6	19·3	10·5	17·1
	April	9·7	8·7	8·9	16·3	9·1	14·5
	July	8·3	4·6	6·7	14·9	8·2	13·1
	Oct.	7·3	7·2	7·0	14·4	8·2	12·8
1937	Jan.	8·8	7·5	8·4	13·8	8·3	12·3
	April	6·5	6·7	6·6	11·8	6·9	10·5
	July	6·0	5·2	5·7	11·3	7·1	10·1
	Oct.	7·7	7·0	7·5	7·2	10·9	9·9
1938	Jan.	9·6	10·8	9·9	13·5	11·2	12·9
	April	8·5	11·5	9·4	12·9	11·3	12·5
	July	7·5	11·1	8·6	13·6	10·9	12·8
	Oct.	9·9	13·1	10·8	13·3	10·4	12·5
1939	Jan.	10·0	12·9	10·8	15·0	11·3	14·0
	April	7·7	10·6	8·5	12·1	9·4	11·3
	July	6·2	7·3	6·5	9·5	7·0	8·8

contrast significantly with the level in Worcester, consistently lower than the national rate.

2. For women, the unemployment rate in Worcester was, like the men's and the total rate, lower than the national level from 1931 to early 1938. But between 1937 and 1938 the Worcester women's unemployment rate rose steeply and in the course of 1938 became higher than the correspondingly national rate and higher also than the men's rate in Worcester. It remained higher in both respects until the outbreak of war. With the liquidation of the war industries that have kept women fully employed since 1940, this problem of women's peacetime unemployment in Worcester may well recur.

3. Both the men's and the women's rate of unemployment showed a seasonal fluctuation more severe than the fluctuation nationally. Taking January and July as key months and averaging the rates of unemployment for all persons in these months during the nine years 1931–9, Worcester compares with Great Britain as follows:

	Average rate of unemployment, 1931–9	
	Worcester	Great Britain
January	13·6	17·9
July	10·1	15·8
January compared with July	+35%	+14%

In winter, Worcester's unemployment is thus over one and a third as high as in summer, while in Great Britain it is only about one and a seventh.

4. Though there was less unemployment for men throughout 1931–9 and less for women from 1931 to 1937 in Worcester than for the country as a whole, the Worcester position could hardly be considered satisfactory by any full-employment standard. In no single month of the period, either those appearing in Table IX or any other month, was the total unemployment below 5·5%, and the average rate for all months appearing in Table IX by any measure of the average was above 11%. Even for the relatively prosperous years 1935–8 the average (arithmetic mean or median) of the Worcester unemployment rates for all persons shown in Table IX is 9%. Yet Sir William Beveridge takes a rate of 3% 'as a conservative . . . rather than an unduly hopeful aim to set for the average unemployment rate of the future under conditions of full employment.'*

**Full Employment in a Free Society*, p. 128.

To sum up. The unemployment position in Worcester before the war, though better than in many other regions, left room for much improvement generally. And there appeared two points of particular concern to plans for improvement: unemployment among women had risen above the national level for a year and a half before the war broke out, and seasonal unemployment was rife among men and women in the winter quarter much more markedly than for the country as a whole. In planning for balanced employment, therefore, industries should be favoured that employ a fair proportion of women and which are more active in winter than summer. Specific examples of such industries are given in § 8.

(*b*) THE QUALITY OF EMPLOYMENT

The problem of unemployment loomed largest on the horizons of the inter-war years; but in planning for the years after the Second World War we must not be obsessed by the difficulties of 1918–39. With a new outlook in Government economic policy, an approach toward full employment may be achieved. But this is not enough. We must inquire into the sort of employment that will be provided for the citizens of Worcester.

Here the guiding principle should be that, as far as possible, occupations are provided to fit and to be worthy of the wide range of abilities and desires of the individual members of the community. If this range is not provided, the City's industries will breed discontentment merely tempered by emigration. The rural areas round the City have, as we have shown, suffered a considerable exodus. The usual explanation of this is lack of opportunity for the more enterprising spirits. A similar loss of the best ability, skill, and initiative may occur if a town is restricted in the work it offers, like the areas specializing solely in agriculture. Worcester, as we have shown, is becoming more of a metalworking and engineering centre; the practical question to ask, therefore, is what range of opportunities the metal industries have to offer.

Worcester could well become an engineering town without being a mere dependant of the Birmingham area, but there is a possibility that such a relationship might grow up. In place of the old craft industries, new light engineering industries might come, for example making components for main industries in Birmingham. As a result the population of Worcester might be engaged in a series of repetition jobs or engineering 'outwork.' This might be detrimental to the quality of the labour force, giving no high standard of training and little opportunity to rise or to change types of job. Moreover, the prosperity of the City would be tied to that of the parent industry outside.

In the description of each Industrial Group, one of the questions stressed was how to ensure that the industrial make-up of the City is such

TABLE X

NUMBER AND PERCENTAGE DISTRIBUTION OF SKILLED AND UNSKILLED WORKERS, WORCESTER, 1927–43. Data from 27 of the older firms

Year	Aggregate men and women	Men			Women				% Women to aggregate
		Total	Skilled (% of total)	Un-skilled	Total	Skilled (% of total)	Un-skilled	Out-workers	
1927	2,826	1,717	1,305 (76%)	412	1,109	839 (78%)	30	240	39
1938	4,756	3,338	2,512 (75%)	826	1,418	1,022 (72%)	110	286	30
1943	6,253	3,997	2,976 (75%)	1,021	2,256	1,431 (63%)	697	128	36

as to provide as high a proportion of skilled occupations as is practicable.

In this connection, Table X may be of interest, though it is necessary to recognize the limitation of its application. The figures are taken from the returns given by 27 out of the 107 firms mentioned. These were the only firms which fulfilled the two conditions of having been in existence over the whole period and of being able to classify their labour force into the categories given. For the purpose, the firms' own definition of 'skilled' was accepted, and was also made to include administrative and supervisory staff.

The proportion of skilled workers, at least among men, shows a remarkable degree of consistency over the period. The outworkers represent mainly the skilled machinists employed in sewing gloves.

In view of the difficulty of finding what constitutes skilled work for each of the different firms, the only conclusion that can be drawn from Table X is that the quality of the labour force of the old firms has not changed very much and that any change which has taken place is due to the introduction of new firms. In examining the range and quality of occupations offered by firms proposing to settle in Worcester, attention must obviously be paid to the range and quality of the available labour to which the occupations are to be offered.

During the course of the industrial investigation various criticisms and suggestions were made by industrialists. The validity of all the criticisms given could not be checked, but four suggestions are worthy of quotation in connection with the quality of industrial opportunities:

1. The period of training required for labour in engineering is longer in Worcester than elsewhere.

2. A higher level of technical education, particularly for the higher grade of engineering workers, is necessary. This applies both to training of purely technical workers and of those concerned with industrial design.

3. Public policy should aim at the preservation of craft industries, high-quality products, and the character of the cathedral City.

4. A better standard of general education is preferable to purely technical training in schools, since a particular job could best be learnt in the factory, where youths also learn to get on well with their workmates. Two school certificates, one technical and one cultural, would best meet needs of youths entering industry.

Besides the type of occupation offered, labour of 'quality' requires certain industrial amenities if it is to stay in the community. In this connection, further criticisms and suggestions made by Worcester industrialists in the course of our inquiry should be noted.

(i) The City should provide blocks of playing-fields to be let to small factories which cannot afford to maintain their own.

(ii) The general provision of recreational facilities for adults is inadequate. This need should be met by the local authority rather than 'paternalistically' by employers.

(iii) British Restaurants or other communal feeding arrangements should be continued for the same reason as (i)—that smaller factories cannot afford their own.

(*c*) WOMEN'S AND JUVENILE EMPLOYMENT

A characteristic of industries worth examining in connection with quality of employment is the *proportion* of men, women, and juveniles which they employ. The total of a city's industries should offer opportunities to men, women, and young persons in proportions matching the working capacities and willingness to work of the men, women, and young persons found in the community. In the bottom line of Table VIII the proportion of women and juveniles in the total insured population of Worcester and Gt. Britain and N.I. is given for all industries. The national and the Worcester proportion of women insured is almost the same, namely 28% and 29% respectively. Apart from the metal trades considered in the last section, the industries giving employment to women in Worcester are first and foremost those in the 'Other Clothing' sub-group that includes gloving. Here in 1938, 718 women were insured, forming 60% of the total insured in this sub-group. No other non-metal sub-group of industries employed more than 370 women; among those employing between 270 and 370 women were Pottery, Other Textiles, Tailoring, etc., and Food. Clearly the decline of gloving in Worcester presents a problem in women's unemployment unless these other industries or the Metal group can fill the gap.

The proportions nationally and locally insured are, in contrast to women, very different for juveniles. In Gt. Britain and N.I., of the total insured 6% were aged 14–16, whereas in Worcester the proportion was 10%. Such a difference in the labour supply for industry is important enough to warrant further inquiry.

Worcester has no greater proportion of juveniles in its total population than England and Wales, in fact if anything rather fewer.* So the discrepancy between local and national juvenile employment must largely be due to juveniles travelling in to work in Worcester from surrounding agricultural districts. This is confirmed by two further facts:

1. The number of juveniles insured in Worcester was in 1938 probably greater than the total number of juveniles living in Worcester, so far as this can be estimated from the Census of Population.

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*Those aged 5–10 at the Census of 1931 would be 12–17 in 1938 and thus form the quinquennial age-group relevant to our discussion. In Worcester this age-group formed 8·0% of the whole population, in England and Wales 8·3%.

2. The number of juveniles insured in the districts surrounding Worcester shows a much smaller proportion compared to adults than for the country as a whole. In the neighbouring areas of the Pershore, Evesham, and Droitwich Labour Exchanges the proportion of juveniles of 14–16 among the insured population was in each case only 4% as against the national proportion of 6%.

The logic of the situation is clear enough. Worcester provides occupations, particularly in retail distribution, where juveniles can be employed. The surrounding districts engaged primarily in agriculture are deficient in such occupations, particularly for girls, for in agriculture only 4% of those insured are juveniles—nine-tenths of them boys. Worcester City thus adds to its other connections with the surrounding agricultural area that it gives work to otherwise unemployed juveniles.

For the City's own industrial planning, however, this high rate of employment of juveniles presents certain problems which it is mainly up to industrialists and business men to solve:

(i) There is practically no reserve of juveniles. The unemployment rate of juveniles was throughout 1931–9 below that of adults. This is the explanation of the fact that in Table IX the total unemployment rate (which includes juvenile unemployment) is consistently lower than the (weighted) average of adult men's and women's rates. In certain months (e.g. December 1936) the juvenile unemployment was actually below 1%.

(ii) The raising of the school-leaving age to 15 and subsequently 16 will partially and then entirely cut off this source of labour supply.

(iii) The jobs offered in 1938 to juveniles must therefore either be dispensed with or else offered to adults. If the job is offered to adults without a change in its nature, higher wages will have to be paid though the job remains of low quality. If the job is dispensed with, other methods must be found of providing the goods or services required, or else the industry concerned may to some degree be lost to Worcester.

§8. WORCESTER'S INDUSTRIAL FUTURE

(*a*) WORCESTER'S ECONOMIC ADVANTAGES

In planning the industrial future of Worcester so as to fit in with regional and national plans, it is essential to bear in mind the particular natural and economic advantages of the City. These particular advantages can be summed up under five headings—three major and two minor.

The three major advantages enjoyed by Worcester are its position in the midst of the agricultural area of southern Worcestershire, its relative proximity to the industrial centres of the West Midlands, and its possibilities as a holiday resort owing to its own attractions—the river and the neighbouring scenery and spas. The two minor advantages of Worcester are its river transport and its position near the population centre of the whole country.

The problem of industrial location is, in broad outline, to choose and keep industries that find economic advantages locally, and yet balance up one with another so as to fit the local population structure. This mutual balancing consists in dovetailing industries with different seasonal fluctuations, in 'splicing' declining with growing industries, and in mixing stable industries with industries subject to severe cyclical fluctuations. Fitting the population structure consists in planning for the total of balanced industries to 'take up the slack' in all the different groups of the occupiable population—men, single women, married women, juveniles, and old people—according to their need for work. It was this lack of balance and fit that caused the most distressing feature of modern unemployment—the depressed areas, or, as Americans put it, the 'ghost' towns. South Wales and the north-east coast had no lack of natural and economic advantages—quite the opposite. They were richly endowed with coal and iron at convenient sites for sea transport. Their tragedy was unbalanced employment in trades subject to severe cyclical depression and (temporarily at least) declining, and insufficient employment fit for women. If Worcester is to plan for full employment she must, while anticipating industries that need her economic advantages, be sure that those industries balance one with another and fit into the structure of her working population.

1. Worcester's position in the centre of an agricultural area makes it a market town specializing in retail distribution as well as dealing in agricultural products. Employment in transport services and public utilities for the whole neighbourhood are also centred in Worcester, and, as we have seen, professional and entertainment services employ a higher proportion of the total employed population than is usual in industrial districts. The demand for this servicing is likely to increase rapidly in centres of rural areas such as Worcester, because the incomes of the agricultural population have been increased since the outbreak of war, more perhaps than those of any other sections of the community. Minimum wages of agricultural labourers have been practically doubled, and farmers have been assured of stable prices yielding reasonable profits. For the City to benefit fully there must, of course, be efficient transport services bringing these relatively new rich into the centre.

This large manpower in service industries makes Worcester a satisfactory location for manufacturing industries generally, since the factory workers and managerial staff will find such services ready made on their doorsteps. In many cases, indeed, these services may not hitherto have been used to full capacity, and the new factory workers will not require a proportionate servicing build-up. An entertainment and shopping centre catering for agriculturists has to be sufficient to take the peak load on market days. On other days of the week there may well be spare capacity for the new industrial workers without building new shops unless higher standards are wanted.

But the agricultural connection of Worcester will offer advantages to certain manufacturers beyond that of a service centre. Many manufactures are economically linked to agriculture. They may use, as material, agricultural products that are costly to transport over long distances or to keep for long periods; or they may make products equally costly to transport or to keep for the agricultural market. Examples of industries that are thus rooted by the nature of their materials are vegetable and fruit processing, bacon-curing, butter and cheese making, beet-sugar refining, cider-making. Examples of industries thus tied by the nature of their products are agricultural engineering, fertilizers, cattle and poultry foods.

2. Worcester, as the crow flies, is twenty-five miles from the centre of Birmingham, and the towns comprising the Black Country lie in an area stretching from Wolverhampton to Smethwick twenty-five to thirty-five miles north to north-east of Worcester.* The distance is not so far that, provided with a motor-car, a manager of a firm with headquarters in Birmingham or the Black Country could not easily supervise a branch factory in Worcester. Since the 'blitz' on Birmingham, many Birmingham firms have in fact successfully established dispersal plants at distances up to fifty miles. Moreover the distance is not prohibitive for the carriage by motor lorry of parts for assembly, or even of materials and semi-manufactured products between processes.† Thus Worcester factories can be linked with factories of the West Midland industrial district—a 'conurbation' employing in 1931 461,000 persons in manufacturing as a whole. The main groups of industries thus found at Worcester's door may be grouped in Table XI‡ exactly as was done in Table I for the Worcester areas.

Comparing the percentages employed in each group of industries in England and Wales shown in Table I, it can be readily seen, as already mentioned in Chap. I, that this West Midland district specialized heavily in metalworking, but was by no means unrepresentative in any of the other groups of manufactures, with the exception of textiles. The Birmingham and Black Country connection, though on the one hand it

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*Area I of Worcestershire was marked out in Ch. I as part of the Black Country.

†Motor engines made in Coventry were, before the war, regularly carried for assembly to Oxford, a distance of fifty miles.

‡Information kindly supplied by West Midland Group for Post-war Planning and Reconstruction. The figures total up data for twenty-eight Administrative Areas extending (see Fig. 2, p. 4) from Stourbridge and Halesowen to Wolverhampton, Walsall, and Birmingham.

TABLE XI

INDUSTRIAL STRUCTURE OF WEST MIDLAND 'CONURBATION,' 1931

Standard grouping	Numbers employed	Percentage of total	
I. Agriculture and Fishing	5,439	0·7	
II. Mining and Manufacture			
1. Mining	12,150	1·5	
2. Bricks, Pottery, Glass	13,187	1·6	
3. Chemical and Allied Trades	8,070	1·0	
4. General Metals	177,603	21·6	39·0
5. Mechanical Engineering and Vehicles ..	94,564	11·5	
6. Electrical Engineering and Lighter Metal Products	48,936	5·9	
7. Textiles	6,327	0·8	
8. Clothing	25,506	3·1	
9. Food, Drink, Tobacco	29,654	3·6	
10. Woodworking	13,833	1·7	
11. Paper, Stationery, Printing	17,341	2·1	
12. Miscellaneous Manufacturing	26,035	3·2	
III. Service Industries			
Building and Contracting	38,158	4·6	
Gas, Water, Electricity	11,109	1·4	
Other	293,690	35·7	
Total ..	821,602	100·0	

may tend to increase the development of metal trades in Worcester, may also lead to development in any other of the thousand trades attributed to the midland cities.

3. With its Cathedral, Guildhall, Commandery, and interesting houses and streets set on a fine river, between two famous spas and two equally famous ranges of hills—the Cotswolds and the Malverns—Worcester has great possibilities as a holiday centre. The 'holidays with pay' movement, which is now being resumed after the war, and the probable flood of tourists from America held up during the war, make these possibilities worth developing. To compensate for the loss of its foreign-investment

TABLE XII

SEASONAL FLUCTUATION IN ENTERTAINMENT AND CATERING, ETC.

	Average unemployment rate, 1935–9 (Great Britain)		
	January	August	Increase in winter
Entertainment and sport			
Men	25·0%	18·5%	35%
Women	12·7%	11·5%	10%
Hotel, public-house, restaurant, boarding-house, club, etc., service			
Men	21·1%	13·5%	57%
Women	17·2%	10·1%	71%

income, Britain as a whole will undoubtedly have to turn after the war to the 'invisible export' of the tourist traffic. In each year 1928–30, almost a quarter of a million fairly wealthy foreign visitors came to us on holiday staying on average about three weeks.* There is every reason for increasing their number and the length of their stay.

Two sets of conditions are necessary, one positive and the other negative, for such development. Positive plans must include ample and satisfactory hotel, guest, and boarding-house accommodation with restaurants and cafés, and especially outdoor catering in enough variety. For outdoor amusements there must be boating, swimming, and transport facilities, parks, and recreation grounds. For indoor amusement there should be sufficient cinemas, a concert hall, and a theatre. These recommendations will be taken up in greater detail in Chap. VIII.

Negatively, near the centre of town or the places of resort there must not be industries with consequences annoying to the senses. Smells, noise, unsightliness, dust, and dirt will repel visitors, many of whom may be trying to escape from these very nuisances. Table XIII, a chart of possible 'anti-social' industrial nuisances to the neighbourhood and their origination, may offer some guidance in planning what to avoid.

Should Worcester succeed in establishing itself as a holiday centre, the extreme seasonal fluctuation in the entertainments and sports industry

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*F. W. Ogilvie, *The Tourist Movement*. Conversely, invisible imports would be saved if old people (of whom there will be relatively so many more) retired to congenial places, such as Worcester could be, instead of abroad.

TABLE XIII

CHART OF NUISANCES TO NEIGHBOURHOOD ARISING FROM INDUSTRIES

The nuisances	Point of origin	Positive loss to health and recreation	Illustrative industries
Smell	Materials Processes	—	Sewage works Gas works Chemicals
Noise	Traffic Processes	Lack of sleep Nervous strain	Drop-forging Sawmilling
Unsightliness	Scrap-heaps Derelict building High walls	Restriction of space Loss of sunlight Lack of ventilation	Mines Mills, offices
Unsavouriness (Taste and touch)	Dust Fumes and smoke	Irritants Loss of sunlight	Potteries Cement Metal works
	Effluents	Pollution No fishing and bathing	Tanneries Some food processing

must be allowed for and balanced by other industries. Table XII shows how serious are these fluctuations in the holiday industries. Compared to August, unemployment was in January from 10% to 71% higher, according to sex and industry.

4. Of the minor advantages of Worcester, river transport is important as bringing heavy materials, such as tinplate, timber, and coal, to the City's doorstep cheaply. Coal of various types for various uses can be obtained easily from South Wales, the Black Country, and Shropshire. If the river is widened and deepened, as proposed (see Fig 56), coastwise shipping from Liverpool or from the Channel could come up to Worcester without the necessity of stopping at Bristol to load the freight into barges. And if bridge levels are adjusted, imports of timber from overseas may perhaps come in also without transhipment lower down the river. This elimination of transhipment would contribute a major economy in transport. As an industrialist we questioned put it, 'An improvement in river transport would be a general help to Worcester's industries.' There is

even a possibility, in view of the proposals of the Severn Commission, that Worcester may become a port serving the whole West Midland industrial area. This would give employment to men, but would require the further development of industries employing women.

5. Finally, the position of Worcester near the centre of population of England and Wales, and amply supplied with road and rail communications in all directions,* though a simple enough fact, must not be neglected. With modern technical developments the pull of raw materials and coal in locating industries has become less dominant, and the market has reasserted itself.† Though a rise is hoped for in England's exports, it is the home market that will probably remain the greater. And the home market, apart from industrial markets (in which Worcester is not ill favoured), is the population. The centre of the population of England and Wales has been calculated‡ as near Rugby, and (adding Scotland) that of Great Britain near Ashby de la Zouch. These points are respectively within forty-five and fifty-five miles from Worcester.

(*b*) AVAILABLE INDUSTRIES

Four out of the five advantages of Worcester relate to the location of manufacturing industries as against the servicing of holidays. But the advantages will be of little practical importance unless there are factories in mobile or footloose industries that are likely to be seeking new locations in the future. It is of no use for Worcester to be attractive if there is nothing to be attracted! But in fact there are plenty of reasons for expecting a floating demand after the war for industrial sites in advantageous and attractive localities such as Worcester.

1. The Government is sooner or later likely to act on the recommendations of the Barlow Commission in favour of the dispersion of industries from congested areas, and on the recommendation of the Scott Committee that such dispersion is better applied to country *towns* rather than villages or open country. There is likely, therefore, to be a demand for sites in Worcester, particularly from industries at present concentrated in London.

2. Industries scarcely ever move, in peacetime at least, in the literal sense that old plant is transplanted from one place to another. But they do move in the sense that new plants are built and extended in places where the industry has normally not settled before. Some industries are more mobile in this sense than others. There are extractive industries like mining and agriculture rooted to natural resources, and semi-extractive industries like iron-smelting rooted for practical purposes by the cost

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*Details of transport facilities are given in Ch. V and Fig. 2, p. 4.

†See Dennison, *Location of Industry and the Depressed Areas.*

‡Unpublished material by the late Lieut. Arthur Wensley, M.Com. (Birmingham).

of transport of one of their raw materials. There are other industries tied to their market by the cost of transport of their product, including the residentiary industries tied to the consumer market, and linked industries tied to some other industry as a market.

Yet there remain many industries that are mobile or footloose which would be free from rooting or tying to districts other than Worcester. *And these footloose types of industry are on the whole increasing in importance,* owing to technical developments such as fuel and material economy and cheaper transport of goods; and owing to the widespread modern demand for products like motor-cars, radio sets, refrigerators, that are assembled out of light semi-manufactured parts.

3. With the end of the war there is an unscrambling of eggs officially known as reconversion, in the course of which many an old-established industry may have to reconsider the whole basis of its establishment. In these cases there may well be the physical transplantation so rare in times of peace. Some factories have been 'blitzed'; others will be in areas scheduled to be cleared; others again will have radically to change their markets or methods of production. On the whole, it will be industries making the more durable products—demand for which has piled up during wartime rationing—that will expand most in the immediate post-war years.

(*c*) THE PLANNED SELECTION OF INDUSTRIES

Worcester has many natural and economic advantages to offer industries, and factories in many industries will be free to settle and develop in Worcester. But there remains the question—should Worcester accept any and all industries that apply for a site?

We have already listed neighbourhood nuisances involved in carrying on certain industries particularly harmful to any pretensions of Worcester as a pleasure or holiday resort. Such nuisances to residents or visitors are not, however, the only score suggested on which industries should be selected or rejected. The industries which Worcester should encourage must, in the classes they employ, match the structure of her available labour supply and the presumed distribution of individual abilities. There must not be women and young persons or older persons or persons of skill and ability unemployed or unoccupied, i.e. over-supplied, merely for want of industrial opportunities; nor yet should there be an over-demand for such classes.

Table XIV instances certain important industries (many of which are concentrated in the congested London area) that would satisfy all or most of the conditions required for development in Worcester. This short list is not intended in any way to tie down the authorities charged with the selection of industries, but simply *to illustrate the use of selective tests.*

When considering applications from firms to build or extend their building in the City, the authorities should ask these questions in particular:

1. Does the industry employ a fair proportion of women, so as to balance the loss of women's employment in the glove trade? A definite test for answering this question is whether the industry employs a higher proportion of women than the 27% for the total of all industries in the country. All nine industries instanced satisfy this test except furniture and paper, and present chances of employing women part time.

2. Is the industry fairly moderate in its demand for juvenile labour, so that Worcester can supply its needs in the future? A test for answering this question whether the industry employs an excessive proportion of juveniles might be whether it exceeds by, say, one and a half times* the 5·8% of juveniles insured in the total of industries for the whole country. All nine industries instanced satisfy this test, except cardboard boxes, printing, and toys.

3. Is the industry growing generally, so as to balance the decline of the glove industry? A first test for answering this question might be whether the workers employed in the industry increased faster between 1923 and 1938 than the 21·5% for the total of all industries. All the nine industries satisfy this test except pottery and paper. A second test for growth must be the expectation of the probable home and export demand in the post-war years. Here industries making durable products whose purchases have been curtailed during the war will clearly benefit from cumulation of demand at home to varying degrees, the degree depending mainly on the durability or 'life' of the product. Among the manufacturing industries instanced in Table XIV a first-degree cumulation of home demand is certainly true of furniture-making, and at least a second-degree cumulation true of printing, paper, toys, and pottery. Demand for holidays has also accumulated, particularly American demand for European travel; and holiday centres may be expected to prosper once transport facilities across the Atlantic have been restored. Of the nine industries instanced, only food products and cardboard boxes, etc., are likely to remain fairly stable in demand. But with rising standards of living there will probably be a demand for wider variety of foods such as canning makes possible. The prospects for export are more difficult to assess, but among the products heavily exported before the war were pottery and printed books. Continued and extended exports can be expected if craftsmanship and good design are fostered.

4. Is the industry fairly stable year by year and not subject to cyclical fluctuations that would add to the cyclical unemployment in the growing metal industries? A numerical test for this question might be whether

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*Since reorganization to avoid employment of juveniles is usually possible, the test must not be too rigid.

TABLE XIV

ASSESSMENT OF FACTORS IN THE SELECTION OF INDUSTRIES FOR WORCESTER

Industry cited as example (Ministry of Labour classification)	Proportion among 1938 total insured		Growth in the U.K. Change in employed, June to June 1923–38	Post-war Prospects in home demand and exports	Depth of Trade Cycle employed 1932 ÷ av. of 1929 and 1935	Seasonal fluctuations, regular or irregular (peak months)	Neighbourhood nuisances	Need for Decongestion Degree of existing concentration measured by location quotient*	Conditions of economic efficiency in Worcester
	of Women %	of Juveniles %							
Other food industries† ..	**47**	5·7	+41·2	Stable	−5·7%	Reg. (Summer and autumn)	**Effluents (?) Smell (?)**	1·4 concentration in London	**Linkage with Agriculture**
Cardboard Boxes, Paper Bags, and Stationery	**65**	**12·1**	+34·3	Stable	−5·0	Reg. (Nov., Dec.)	—	1·9 concentration in London	**Linkage with Agriculture**
Furniture-making and Upholstery	**18**	8·1	+57·3	1st degree cumulation	−9·4	Reg. (Spring, autumn)	—	1·9 concentration in London	**Supplies of timber by water**
Paper, Paper Board	**26**	4·6	+16·7	Cumulation	−5·5	Irr. (Dec.)	—	—	**Supplies of pulp by water**
Printing, Publishing, and Bookbinding	**34**	**10·6**	+27·6	Cumulation, export	+1·0	Reg. (July, Dec.)	—	1·9 concentration in London	**Dispersible industry suitable for County Town**
Pottery, Earthenware, etc. ..	**56**	**8·0**	**−2·6**	Cumulation, export	**−21·0**	Reg. (Mar., Oct.)	**Smoke (?)**	—	**Reputation established**
Toys, Games, Sports Requisites	**55**	**15·0**	+57·8	Cumulation	**−14·5**	Reg. (April–Aug., Dec.)	—	2·3 concentration in London	**Dispersible within central area of country**
Entertainment and Sport ..	**40**	4·5	+150·5	Cumulation	−5·0	**Reg. (Summer)**	—	1·6 concentration in London	**Scenery River Architecture Spas**
Hotels, Catering, etc... ..	**62**	3·5	+71·7	Cumulation	−5·0	**Reg. (Summer)**	—	1·6 concentration in London	
ALL INDUSTRIES	**27**	5·8	+21·5	—	−9·0	—	—	—	—

Note. Figures and factors in bold type are assessed as unfavourable.

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*For definition, see § 1 of this chapter, or Ch. I footnotes.

†E.g. Jam and preserving; bacon, hams, and sausage; cattle and poultry foods; butter, cheese, dried milk. These industries are not distinguished separately in the Ministry of Labour's returns.

employment in the industry dipped no more between 1929 and 1935 than the 9% dip of the total of industries. All the nine industries instanced satisfy this test except pottery, furniture, and toys.

5. Does the industry counterbalance the dominant seasonal fluctuation in Worcester whereby unemployment is high in the winter and low in the summer? Of the nine industries instanced, two (entertainment and catering) make the fluctuation worse, two (cardboard boxes and paper) have their peak in winter and balance well; but the rest are neutral. In glove-making employment does not fall off in winter, and the further decline of this industry would make it more imperative than ever to find industries active in the winter. The possible large development of Droitwich with its brine baths as a winter resort and health centre is a possible solution. Worcester workers catering for Worcester's summer visitors could find winter employment in Droitwich. And possibly some of those visiting the brine baths would prefer accommodation in Worcester, offering wider interests and ample accommodation at that season. This solution would involve efficient transport between the two towns and efficient heating in the Worcester hotels.

6. Apart from the foregoing questions of balancing employment, is it in the interest of economic efficiency that the industry come to Worcester? Is the industry necessary for the development of Worcester's other industries, either as a service to them or as a link in their chain of processes or as a by-product? Is the industry likely to benefit from one or more of the economic or natural advantages of Worcester detailed in § 8 (*a*)? Or, on the contrary, will it interfere with existing or projected activities? Thus industries giving rise to neighbourhood nuisances would interfere with the holiday and tourist industry. On the other hand, ironfoundries making castings such as already exist in Worcester (Table VIII, 4 (*ii*)) may help the development of metal industries making finished wares from those castings.

7. Finally, is it in the national interest that this particular industry come to Worcester? Is the industry acting on the policy of decongestion and dispersion suggested in the report of the Barlow Royal Commission and aiming to settle precisely in the sort of market town the Scott Committee advocated as a site? If so, and there are no objections on the other scores mentioned, obstacles of a sectional nature should not be put in the way. Among the nine industries instanced in Table XIV, seven show a concentration in London measured by a location quotient of 1·4 or over.

To sum up. Table XIV is intended to show how questions of great import to Worcester's industrial future can be answered objectively by numerical assessment, largely based on returns of the Ministry of Labour. A few important industries not already dealt with under the Clothing and Metal groups are given as instances, and the unfavourable assessments shown in bold type. All the industries, with the possible exception of pottery, show a majority of assessments favourable to location in Worcester. The same questions can be asked and similarly answered by assessment of any other industry that may be suggested for location in Worcester. The table is offered as a sample guide to planning.

§9. SUMMARY AND RECOMMENDATIONS

RECOMMENDATIONS for Worcester's post-war industrial policy must, to be practical, rest on knowledge of the City's existing and potential industrial structure. In §§ 1–6 the salient facts and trends have been brought out in detail. Up to the outbreak of war the City acted mainly as a marketing centre for a surrounding area devoted mainly to agriculture, and together with this area had a fairly balanced economy as between various industries and sizes of firms. Unemployment, except for women in 1938–9, was well below the national average, though subject to wider seasonal fluctuation. Metal trades, however, were taking the place of the glove industry, which employed many women, including outworkers. These trades are bringing in their train the risk of cyclical unemployment.

Special inquiries which we undertook showed that the war has increased the numbers employed by the metalworking and engineering firms, and some of this increase may persist; though on the whole the economy will probably revert to the 1938 position. The specific danger-points threatening employment are thus the seasonal fall of employment in winter, especially among women, and the likely cyclical fluctuations in the metal industries.

If quality as well as quantity of employment be an object of policy, attention must also be paid to the risk of an excessive extension of repetitive jobs in the metal industries and of jobs only suitable for juveniles. The supply of juveniles will fall, owing both to the fall in the birth-rate and to the raising of the school-leaving age.

Local authorities cannot normally direct the location of industries, nor can they offer the financial inducements proposed in the case of the Central Government.* But they can act negatively through zoning restriction, reservation of sites, etc., and can offer positive facilities. These facilities include sites and more efficient and cheaper public utilities (electricity, water, gas, sewage disposal) for the carrying on of business; and efficient and attractive housing and housing layout, recreational and transport facilities, communal restaurants, and social services generally, for the workers.

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*E.g. Third report of the Commissioner for the Special Areas, 1936, pp. 9–11.

Recommendations on housing and the relation of housing and factory layout, on recreation and social services, and on transport will be made in the appropriate chapters. Clearly, the City has sufficient power at least to encourage or discourage certain specific industries, and if the City wants to counteract its probable natural fall in population (outlined in Chap. III) it will encourage rather than discourage industries.

Accordingly, recommendations that take account of Worcester's particular economic advantages as well as of national policies, particularly that of dispersion, have been put forward in the course of this chapter, as follows:

1. To try to maintain the glovemaking industry by additional training schemes for skilled craftsmen, designers, and managers at the technical college and similarly to train the skilled workers required in pottery and branches of engineering. Skill and good organization (and design) are likely to be important factors in post-war trade.
2. To encourage industries offering full- or part-time jobs to a fair proportion of women—but not too many to juveniles; and also industries offering a due chance to the skill and ability of the City's population.*
3. To encourage industries, such as food-processing, that are connected with the surrounding agriculture, that are not declining, and that, to counterbalance the growing metal trades, are not subject to cyclical fluctuation.*
4. To encourage industries that are stable throughout the year, in order to smooth out Worcester's present winter unemployment.*
5. To co-operate with the Severn Commissioners, as well as road and rail transport authorities, to derive full benefit from Worcester's central position in the country.
6. To encourage holiday and tourist traffic, and especially the residence of winter visitors seeking relaxation and health in the neighbourhood, e.g. at Droitwich, and to discourage industries giving rise to specific neighbourhood nuisances that would deter visitors and potential residents.
7. This encouragement of tourists and residents to be sustained by an extension of the City's catering and hotel services and the facilities for indoor and outdoor entertainment.

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*The sources of information and the tests for such industries are described and illustrated in the text and tables, §§. 6–8.

CHAPTER V

TRANSPORT

The transport problem of Worcester is here measured largely by statistical data, such as volume of traffic, times taken in travel, and the incidence of accidents. These data exhibit clearly the various interlocking factors which make transport basic in all national and local planning. Worcester is shown to cope with a complex of four types of traffic—'through,' 'regional,' 'internal,' and 'industrial'; and it has been possible by analysis to point to certain practical solutions of the problems involved. This complex of traffic is a characteristic of all industrial, through-traffic, regional-capital cities such as Worcester.

The extent of the problems in the efficiency and social cost of transport is most clearly demonstrated by the aid of diagrammatic maps. The relation of road planning to layout by neighbourhood is tentatively illustrated in Fig. 57 in Chapter XII. These methods of presenting traffic problems and their solution are applicable to most towns and cities throughout the country.

The location and zoning of industry, the use of shopping and service facilities, the linkage of town and country, and neighbourhood and housing development, are all interrelated with the efficient organization and control of transport, and they cannot conveniently be discussed until the transport situation has been considered as a whole in this chapter.

§ 1. OVERALL TRANSPORT PROBLEMS

EXCEPT for pleasure touring, transport is a means of moving goods and persons between one place and another, and a town should be so planned that movement of persons and goods between the two places should be as convenient, speedy, cheap, and safe as possible. Convenience can be measured by frequency, timing, and comfort of service, and by its accessibility, so that no places between which transport is required are too far from a route. Speed can be measured in time taken; cheapness can be measured in terms of money; and safety in terms of accidents. Wherever possible these objective tests will be used in text, tables, and maps to judge of the overall transport efficiency or inefficiency of the area.

The easiest test obtainable of inefficiency of transport is the rate of accidents. There is no question of the seriousness of the road accident problem in the modern world. 'In the year 1936–7 there were 199,062 accidents involving personal injury on the roads of Great Britain; there were 236,555 casualties, of which 6,539 were fatal. Pedestrians and cyclists were the chief victims. 26% of 3,057 pedestrians killed were children under 11 years of age; accidents in built-up areas accounted for 62·4% of the killed and 74·1% of the injured.'*

The places where accidents occurred in Worcester in the year 1943 are shown in Fig. 21. 54 pedestrians, 97 cyclists, and 128 drivers or passengers in vehicles were involved. 1943 was not a particularly heavy year for street accidents: the total of persons involved was 279, of whom 8 persons were killed, 8 seriously injured, and 138 slightly injured. In 1935–8 the average total of persons killed annually had been 7, and injured (seriously or not) 165. Nor was the black-out mainly responsible. Only 46 out of the 279 persons involved were involved during hours of darkness.

Accidents to juveniles amounted to 42 out of the total of 279 and occurred where there are special concentrations of children, such as on housing estates and in side streets where children play. Those involving adults were chiefly on the main north–south artery, particularly in the centre of the City from Foregate Street to Sidbury, on the approaches to the Bridge and on the Bridge itself, and in some of the narrow cross-streets of the central area. The correspondence of accident-frequency with shopping areas is noticeable.

Accidents, and traffic heavy in relation to the width of the street, connote traffic blocks and congestion, particularly where injuries are slight and probably not due to excessive speed. The heaviness of traffic in Worcester is indicated in Fig. 22, and should be compared with the places of accidents in Fig. 21. The width of coloured band measures the number of vehicles of different types along Worcester's main streets. The figures are based on the Ministry of Transport Traffic Census taken at twenty specific points within the City in August 1938. The outstanding feature is the volume of passenger cars and of bicycles in the central portion of the main north–south artery, and across the Bridge to St. John's. This traffic converges into (and diverges from) the central streets by means

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*P. E. P. *Planning*, No. 211, p. 3.

of side streets—not all indicated on the map. Its convergence seems particularly heavy over the bridge and heavy in relation to width of road in High Street and Sidbury. Intensity of traffic and incidence of accidents (with a high proportion involving cyclists) clearly coincide.

There are no direct statistics of the well-known delays due to congestion in Worcester, though photographs (Figs. 51–4) tell the tale. The Bressey Report made some startling revelations about the speed of motor vehicles in the centre of 1936 London, and a small, busy town with narrow streets may in places be just as congested as a metropolis. 'The average speed of a private car travelling between Ludgate Circus and Commercial Road was only 5·85 m.p.h.; on the slowest recorded journey the speed dropped to 3·6 m.p.h. On forty-four test journeys across London there were thirty-seven stops lasting 73½ minutes at Ludgate Circus and forty-one stops lasting 36½ minutes in Euston Road. The recent County of London Plan commented: "The cost of delays in New York has been estimated at £70 million a year. If a similar estimate were made for London, it would probably be found little if any short of this figure." '

'In this way the great advantage of the motor vehicle—its speed—was gradually being nullified; just before the war the horse-drawn cab was as fast in city streets, the pedestrian almost as speedy, as the automobile.'*

Slowness (and expense) of transport can also be measured by statistics of time taken and cost of getting to work. Here Worcester, as Table I shows, is fortunate compared to large towns such as London and Birmingham.

Inefficiency, wherever it is found, must be remedied by a new plan. But before this is drawn up, the cause of the existing transport inefficiency must be known. In analysing the existing transport, the definition given at the outset was designed as a useful pointer. The definition ran: *Except for pleasure touring, transport is a means of moving goods or persons between one place and another.* The traffic at any point within a town can thus be divided into touring traffic (e.g. sightseeing and going for a spin) and traffic moving from one place to another (*a*) both places outside the City, (*b*) one outside and one inside the City, (*c*) both inside the City. Where transport (under (*b*)) has one terminal inside and one outside the City and the City is, like Worcester, both a regional centre and a manufacturing town, there is a distinct class of regional traffic, and a further distinct class of industrial traffic consisting of goods used as material, or goods issuing as products of the City's industries. A further distinctive subdivision is holiday traffic visiting Worcester from outside the region.

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*P. E. P. *Planning*, No. 211, p. 3.

Thus for purposes of City planning, transport between places should be considered under the following heads:

A. Both terminals outside the City—'Through' traffic.

B. One terminal inside the City, one outside—

1. 'Regional' traffic
2. 'Industrial' traffic
3. Holidays to City
4. Other traffic

C. Both terminals inside the City—'Internal' traffic.

Up to the present, neither tourist traffic with no fixed terminals nor other holiday traffic has presented any serious problems in Worcester, except seasonally as part of the through traffic. The different categories of traffic that are of practical importance to planning are therefore the through traffic, the regional, the industrial, and the internal traffic. They will be discussed in the next four sections.

§2. THROUGH TRAFFIC

THE serious problem of through traffic that planning has to face only arose since road transport revived with the invention of the petrol engine. To Worcester, this problem is presented in a particularly acute form. The road system of England today is very much the same as in the eighteenth century. Older cities like Worcester are still nodal points, though they may not have the resources of newer, larger, and richer towns to adapt their streets to the new traffic. As Fig. 2 (page 4) shows, Worcester is as distinct a hub of radiating major roads as Birmingham with almost twenty times its population. In fact, several main roads seem to avoid the larger but more modern city. The Watling Street runs through Atherstone twelve miles north of Birmingham, while the Worcester–Wolverhampton Road branches off at Bromsgrove, leaving the centre of Birmingham to the east. Worcester has developed its building area along the three major roads converging on and passing through the City—to the disadvantage of through traffic using the roads and the City itself. Trends (see Fig. 24) were northwards, following the routes to Wolverhampton and Birmingham, the physical circumstances of the site aggravating the trend and producing the present street system.

These roads forming the framework of the City (routes numbered in Figs. 22 and 100), are as follows:

A38, from Birmingham via Bromsgrove and Droitwich, continues south to Tewkesbury and Gloucester;

A449, from Kidderminster and Wolverhampton, joins A38 for a short distance through the centre of the City, crosses the Severn by Worcester

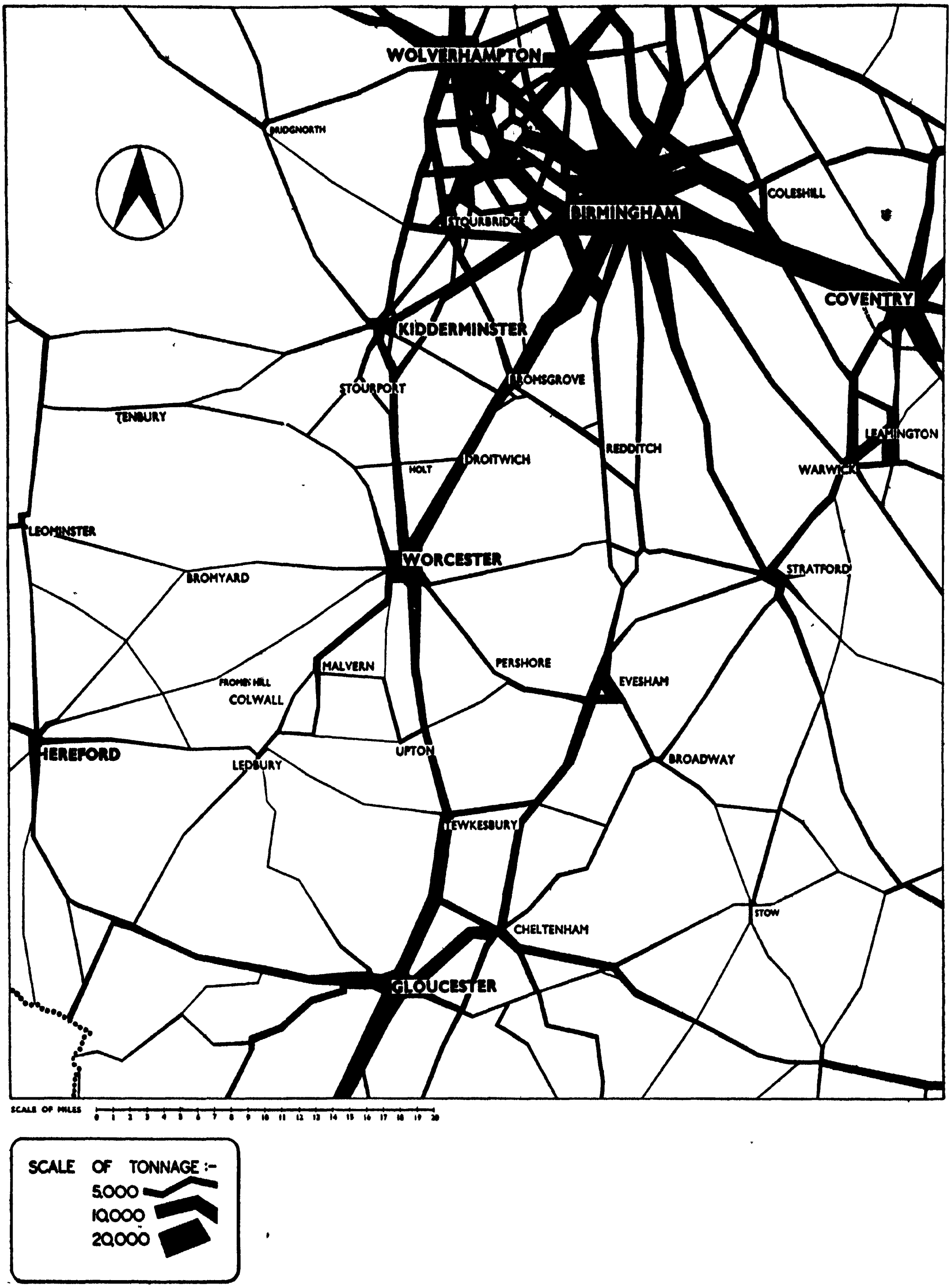

Fig. 14. *Volume of Traffic daily on Main Roads through Worcester: Census of* 1938, *Ministry of Transport.*

Bridge, and continues to Malvern, Ledbury, and Ross, connecting here with the A40 to South Wales;

A44, with less traffic than the other two, connects Radnor, Kington, Leominster, and Bromyard with Worcester, crosses the Severn, and continues to Evesham and Broadway, meets the A34 at Chipping Norton, by this road connecting to Oxford and London.

Two other main roads originate in the City and exercise a similar though lesser influence on development. These are:

A4103, branching from A44 within the city boundary, reaches Hereford via Fromes Hill;

A443, leaves A44 at Worcester Bridge and passes through Great Witley to Tenbury via A456.

The importance of Worcester Bridge, the only road crossing of the Severn for five and a half miles upstream and some eight and a half miles downstream, is at once apparent. The city and the whole area suffer from the lack of lateral roads, due to the lack of river bridges.

The weight of the total traffic on Class A roads passing into and out of Worcester can be seen from Fig. 14, based on the Ministry of Transport Census taken in August 1938. The tonnage that passed a given point daily is represented on the map by relative width of band. It is not, of course, possible to say with exactitude how much weight of traffic was regional and how much was through traffic, but the fact that a band of fairly *continuous* width is shown north and south of Worcester indicates the probability that there was a constant flow of traffic through Worcester. This is mainly composed of two northerly streams from (or to) the Black Country and Birmingham respectively, combined through the bottleneck of Worcester's main artery* southward toward (or from) Gloucester and Bristol. There is no north-and-south route within many miles that in any way rivals in volume of traffic this route through Worcester.

On the east–west road across the Bridge, the traffic is not so thick, and most of it is probably internal to Worcester or regional, since no large centres of population are connected by this road.

These main roads converging on Worcester certainly present the dilemma of urban areas in an acute form. As a channel for traffic, a road should allow easy movement for pedestrians and vehicles of various sorts and speeds without interference one with another. This was more or less achieved when the vehicles were horse-drawn and few in number, a condition lasting for centuries. The present street system was designed for animal locomotion, when through traffic was a cultural and commercial advantage rather than a threat to life, and the advent of motorized locomotion has produced a problem difficult of solution by mere adaptation and piecemeal widening. The present traffic through Worcester is of every kind: passenger transport in public vehicles (especially at holiday seasons) and in fast-moving private vehicles; bicycles; heavy, long-distance goods traffic in lorries; short-distance delivery vans.

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*E.g. Foregate Street, The Cross, High Street, College Street, Sidbury. (See street map, Fig. 100.)

Possible solutions to such congestion, short of drastic street widening, lie mainly in four directions:

1. In a by-pass or ring road (designed to cut out level crossings and other danger points) which will keep the fast north–south through traffic out of Worcester. A plan for a one-purpose trunk road with no level crossings, to pass well east of the City through Spetchley, has already been drawn up for approval by the Government. There are some social and economic objections to such a scheme, and alternative plans are suggested in Chap. XII.

2. Diversion of all new long-distance traffic in heavy goods back to the railway. Adequate railways exist parallel to the congested north-and-south roads through Worcester capable, with sufficient density of traffic and consequently low overhead costs, to take traffic at low rates. Public expenditure in fitting roads to meet additional heavy long-distance traffic is justifiably (in Dr. Gilbert Walker's* view) recovered by a tax on the carrier. The resulting higher charges to the trader may well drive him back to the more suitable railway.

2. Adequate parking places, service roads, etc., to keep standing vehicles out of the main Worcester north–south artery, which is identical with its main shopping streets.†

4. Pedestrian alleyways to segregate foot-passengers and prevent overcrowding and overspill from the pavement along the main through artery. Possibly some of the main shops, though still in the centre of town, could, by facing on precincts,‡ prevent those gazing into their windows from causing congestion and, indirectly, accidents.

§3. REGIONAL TRAFFIC

To show details of the regional traffic starting or ending in Worcester a series of maps have been specially prepared. Thanks to the time-factor, parts of the passenger traffic can be sorted out as follows:

(*a*) Persons coming in to factory work in Worcester. Normally they would arrive in the City by 8 a.m.

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*Gilbert Walker, Litt.D., Reader in Economics of Transport, University of Birmingham: *Road and Rail*, pp. 215–16.

†See footnote on p. 95.

‡Fig. 88 gives a possible lay-out.

(*b*) Children coming in to school at Worcester and persons coming in to office and shop work. Normally they would arrive in the City by 9 a.m.

(*c*) Persons coming in to Worcester for evening functions and entertainment. Normally they would not leave the City before 9 p.m.

(*d*) Persons coming in to Worcester for marketing and shopping. Additional buses on Saturdays and market days cater specially for this traffic.

(*a*) and (*b*) People come regularly by train to work in Worcester. Fig. 19 shows a large amount of travel in 1943 (January) on workmen's and season tickets taken together from the Malverns and a lesser amount from Kidderminster, Ledbury, Evesham, Bromsgrove, and Bromyard. Season tickets prevailed from Evesham, Bromyard, and Droitwich; workmen's tickets from Ledbury. From the Malverns and Kidderminster both types of tickets were used extensively. Buses bringing people to Worcester before 8 a.m. in time for work in factories came, in normal peacetime up to 1939, only from Hallow and the Malvern and Bromsgrove directions. Buses arriving before 9 a.m. in time for school and office and shop work (indicated in Fig. 17) came, however, from most main directions except Bromyard and Fromes Hill in the west and Pershore in the south-east; but (compare Fig. 16) along few subsidiary routes.

(*c*) Buses leaving the City after 9 p.m. and allowing for an evening's entertainment are shown in Fig. 17. They run regularly, even under peacetime conditions, only along the Malvern–Birmingham route and to Hallow and Kempsey. But extra services after 9 p.m. are run on one day of the week (usually Saturday) in every direction.

(*d*) The number of ordinary monthly return tickets bought in 1943 (January) by persons coming into Worcester from various stations is shown in Fig. 18. Some of the travel was to get to work, but much was by monthly return tickets probably taken for shopping purposes. The main daily traffic in order of bulk came from the Malverns, and from the Evesham and Kidderminster directions. In contrast to this travel into Worcester and back, the travel out of Worcester to these surrounding places was slight. An interesting point was that there was a greater extent of railway travel on these ordinary tickets into Worcester from Bromyard than to Hereford from Bromyard, whereas from Ledbury the flow of this traffic to Hereford is rather more than to Worcester. The traffic by road of passengers travelling in for marketing and shopping, and also afternoon entertainment, is indicated in the regular daily bus service and in the extra buses run on market days and Saturday. The frequency of this traffic, measured in buses per day or week, is shown in Figs. 15 and 16 by the width of the line. It is clear that Worcester is a very important centre for these purposes. Lines, many of them thick, converge

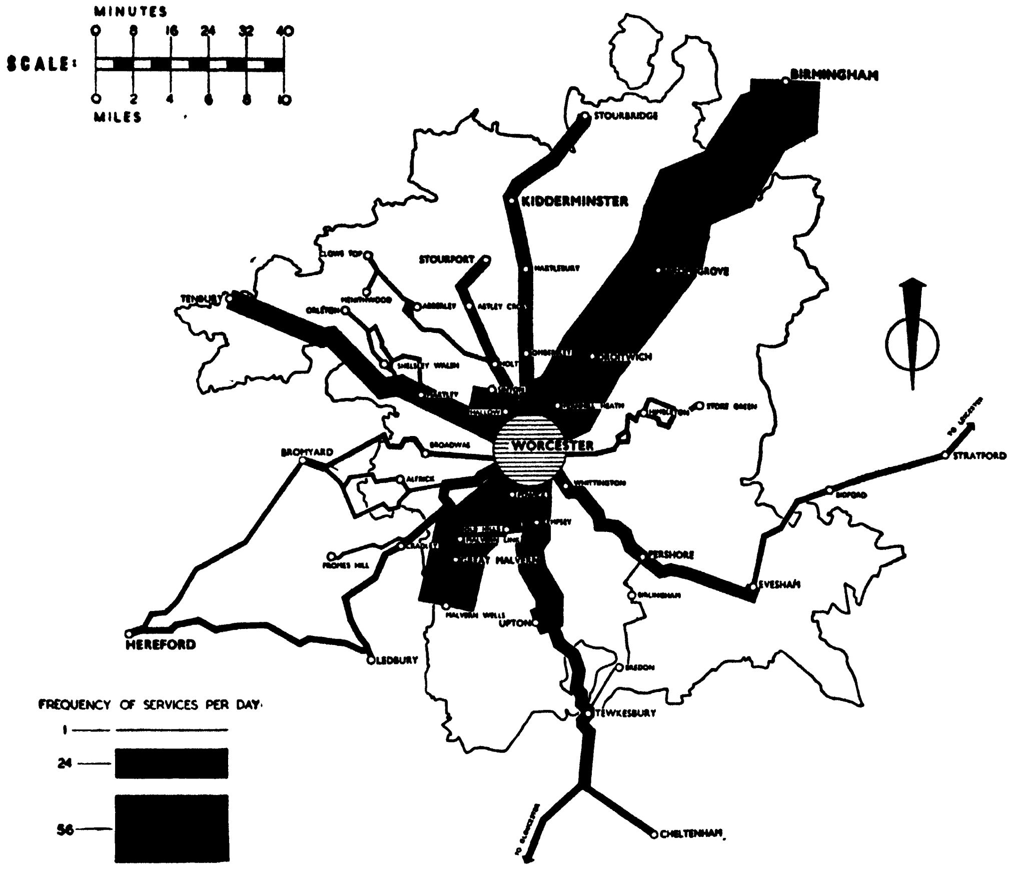

Fig. 15. *Daily Frequency of Regular Daily Omnibus Services into Worcester in* 1939.

upon the City from nearly all parts of the compass. Every main road has its service.

The most frequent of the *regular* daily passenger bus services into Worcester, shown in Fig. 15, is that operating between Birmingham and Malvern, with over fifty return journeys per day. Next, with about twenty-seven return journeys a day, comes the short-distance route to Sinton Green and Hallow, neither of which is accessible by rail. Next in order of frequency as shown by the width of band is the service from Tenbury via Martley, and the service from Upton-on-Severn via Kempsey. The amount of traffic on each of these routes amounts, however, to not more than a third of that on the Birmingham–Malvern route. Other of the more important services run from Stourbridge via Kidderminster and Ombersley, operating approximately ten journeys daily; from Evesham via Pershore and Whittington, approximately seven journeys daily; and slightly less frequent services operate from Stourport via Astley Cross and Holt Heath and between Old Hills and Worcester via Powick.

Still less frequent regular daily services (two return journeys per day)

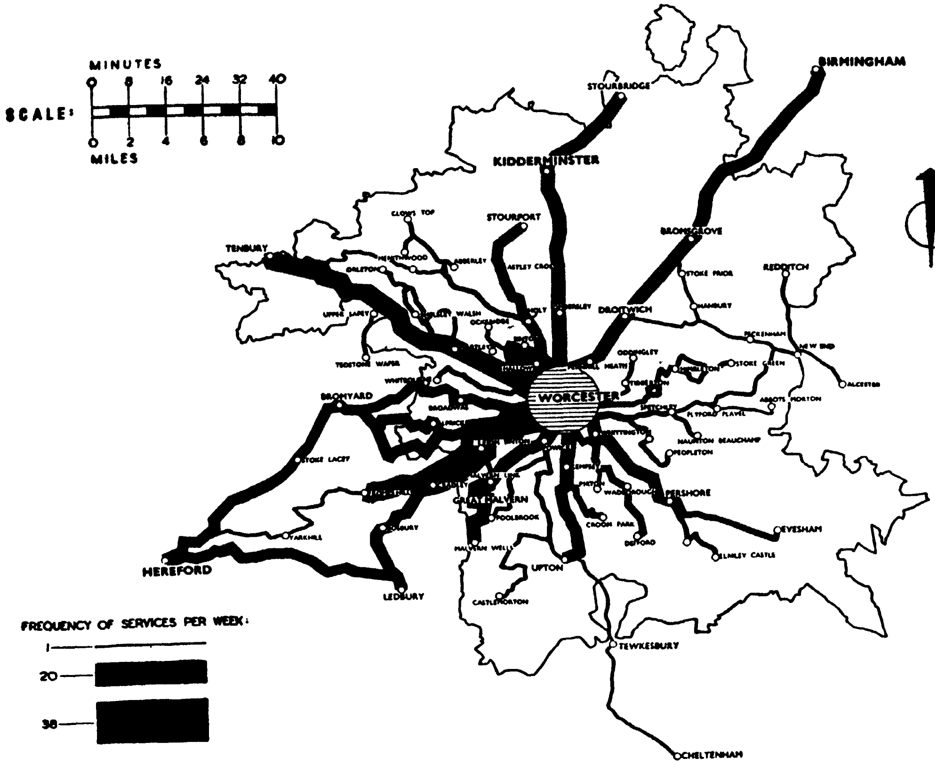

Fig. 16. *Weekly Frequency of Extra Omnibus Services into Worcester in* 1939 *for Market Days and Saturdays.*

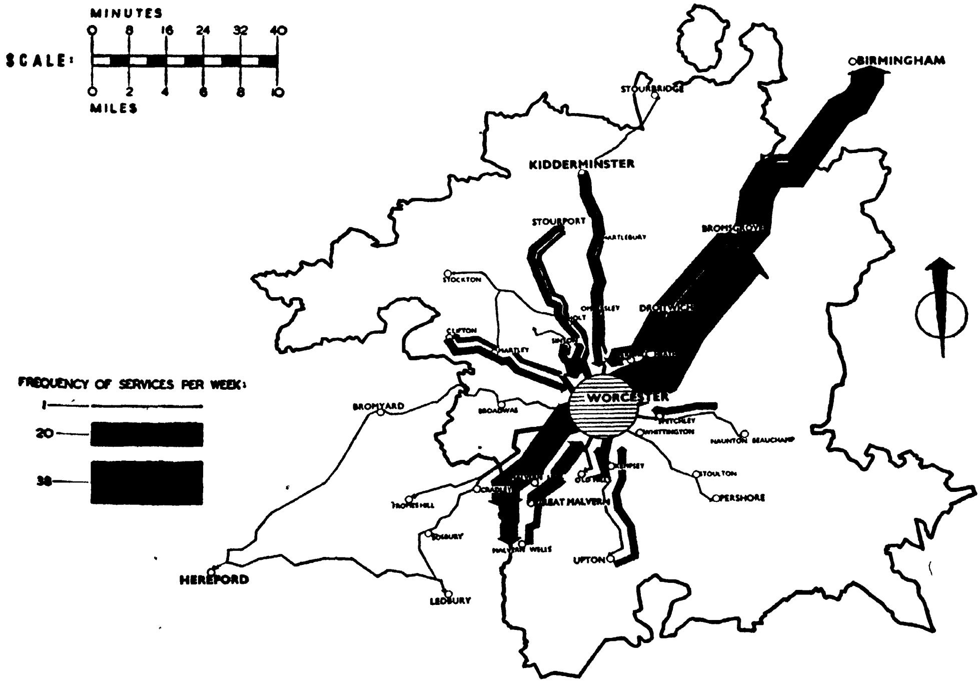

Fig. 17. *Weekly Frequency of Omnibus Services* into *Worcester in* 1939 *for Work and School* (*red*), *and* out of *Worcester from Evening Functions* (*black*).

occur between Worcester and the following places: Hereford (two routes), Fromes Hill, Bromyard, Orleton, Clows Top, and Himbleton. Whereas the more frequent regular services cater for all types of travellers, e.g. workmen, business people, shoppers, holidaymakers, these services link up a number of villages and are definitely operated to provide a main access to the shopping and marketing facilities of Worcester.

A little through traffic also appears on the maps. Long-distance services operate between Birmingham and Cheltenham or Gloucester, passing through Worcester, with nine regular return journeys per day. There was also a service from Leicester to Hereford through Worcester, running twice daily, all of which catered for the casual holidaymaker or visitor.

The *extra* services (mainly of the Midland 'Red' bus company) on market days and on Saturdays to provide additional facilities for shopping and recreation are shown separately in Fig. 16. The map probably gives the best available picture of the widespread effective demand of outlying country districts and small towns for the shopping and recreation services offered by Worcester. Most of the traffic appears to come from west of Worcester; north-west from the direction of Tenbury and Martley and (a shorter distance) from Sinton Green; and south-west on the Hereford routes via either Bromyard or Ledbury; and from Fromes Hill. Many additional services are also operated on the Birmingham–Malvern route, and, unlike the regular services, there are at least some buses from the villages east of Worcester. From these less densely populated areas (see Fig. 4, page 7) only a weekly service into Worcester appears to be economic for the bus companies.

The services mapped are those which operated before 1939, plus additional services which have been found necessary since the war began, and which are likely to be the services operating when normal conditions are resumed.

From the description of the train and bus services just given and illustrated in Figs. 15–19, some estimate can be made how far the regional passenger transport of Worcester as a whole is efficient. At the outset of this chapter the first tests of efficiency in transport were, under the heading of convenience, given as frequency, suitable timing, and accessibility, i.e. a well-covered map.

During the war, there were complaints of the infrequency of timing of the bus service for shopping purposes in the course of meetings of Parish Councils, Rural District Councils (e.g. Pershore R.D.), and in the replies to questionnaires circulated in the country districts.* The Midland 'Red' company, who operate most services in the area, admittedly cut down the less frequent services still further owing to official cuts in petrol

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*See App. III.

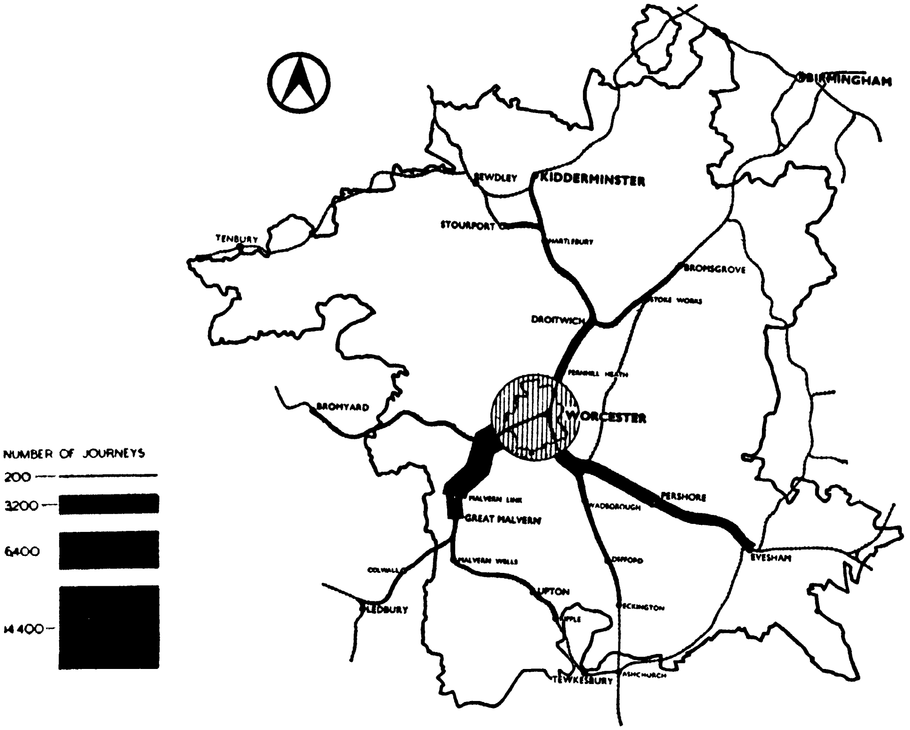

Fig. 18. *Rail Travel into Worcester: monthly return tickets—Jan.* 1943.

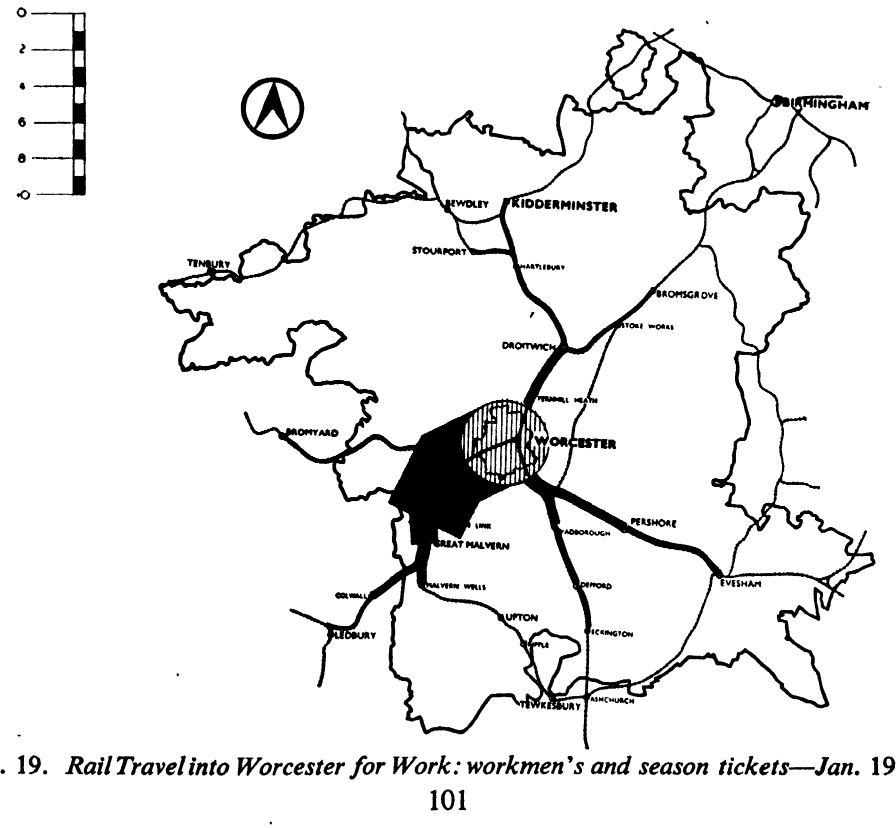

Fig. 19. *Rail Travel into Worcester for Work: workmen's and season tickets—Jan.* 1943.

and shortage of staff. On the other hand, the most frequent service, e.g. Malvern to Birmingham, and services to arms factories have been increased.

In the near future, the less frequent services will no doubt be restored. But the questions remain whether Worcester should not press for still more frequent and suitably timed services and for some service at least from villages hitherto inaccessible by public conveyance. If the City is to obtain the full advantage of constituting the centre of a rural region, and confer reciprocal advantages on the region, lack of transport should not stand in the way. The agricultural community has earned increased incomes during the war and will probably continue to do so. They should be enabled to use this increased income in getting a higher standard of goods and services, including leisure enjoyment, in the County Town. Thus additional regional passenger transport to Worcester, by tapping a widely scattered population, will benefit Worcester and also benefit agriculture, since it may well reduce if not stop the rural exodus of the past described in Chap. III.

The other criteria of efficiency (besides convenience) given at the outset were safety, cheapness, and speed. Accidents are relatively low on professionally driven vehicles such as buses; cheapness and speed can be measured in published fares and time schedules.

The normal fares just before the war were at the rate of 1d. a mile single and about 1⅔d. return. Single tickets were thus considerably lower than third-class railway fares, then 1½d. a mile; but only slightly lower than third-class monthly returns, then 2d. a mile. The railways, however, issued day-return fares over much of the region, which worked out third-class at ¾d. per mile. Whether post-war fares will return to these pre-war rates cannot be foretold, but if the frequent and suitably timed services into Worcester urged above are to be used by country folk, then fares must not discourage traffic. There must be no tacit agreement with the railways to keep the fares by road and rail more or less on a par. Technical progress may quite possibly reduce further the costs of operating road vehicles. The consumer should not be deprived of the benefit.

The speed of the regional services depends largely on the housing density of the road and frequency of stops to pick up passengers. Along the main Birmingham–Malvern route, the scheduled time from Worcester to Birmingham is one hour and thirty-one minutes—a speed near the normal of about eighteen miles per hour.

So far it has been assumed that regional traffic is a passenger traffic accommodated in public (railway or road) vehicles. Different problems arise, however, when vehicles are privately owned. Well-to-do residents in the area of Worcester's influence will come in to shop, or to be entertained, in their own motor-cars. The frequency of accidents along Worcester's main shopping streets (see Fig. 21) is undoubtedly contributed to by cars parked in those streets. This additional cause of congestion must be met by planning parking places conveniently situated to cinemas, hotels, etc. In particular, motorists should not have too far to carry parcels from shop to car.

Regional goods traffic presents no special problems. It is considerable on market days, but the railways cope with the bulk effectively.

§4. INTERNAL TRAFFIC

WITHIN a moderately sized city such as Worcester, a high proportion of persons wishing to go from place to place either walk or cycle. Travel by vehicle occurs, however, where persons living in suburban areas wish

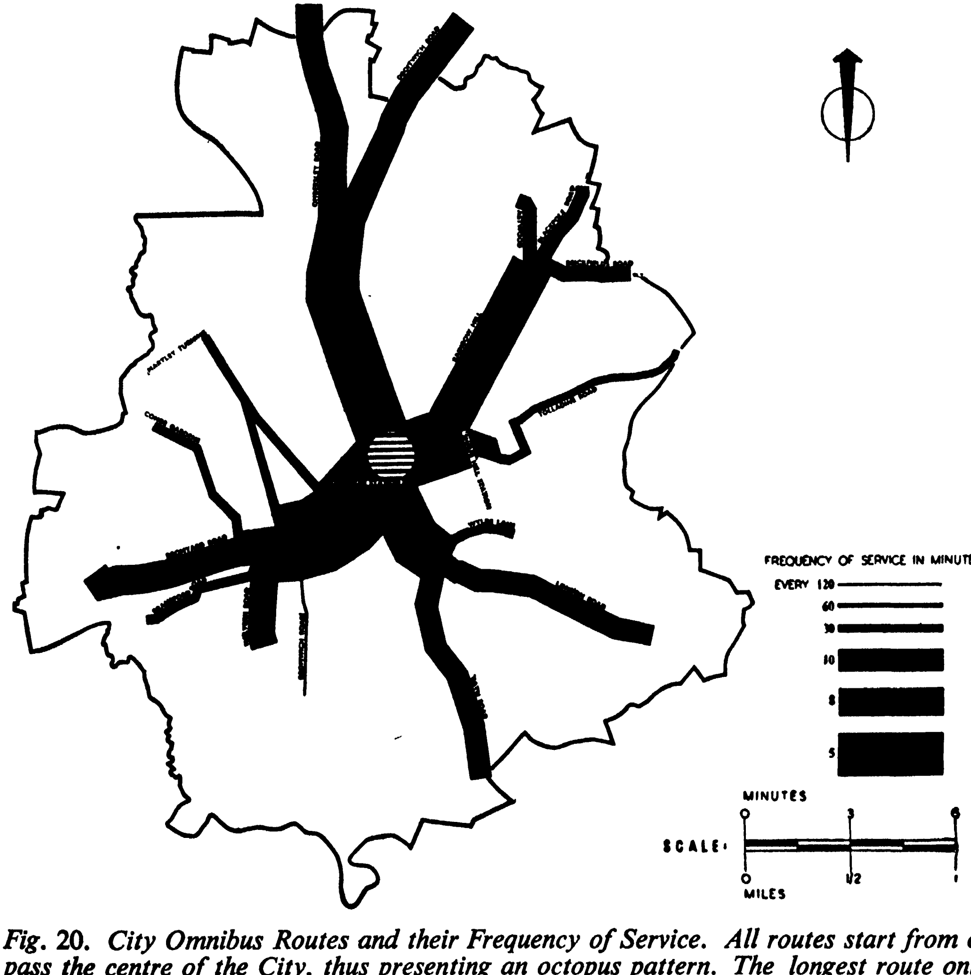

Fig. 20. City Omnibus Routes and their Frequency of Service. All routes start from or pass the centre of the City, thus presenting an octopus pattern. The longest route only takes thirteen minutes, but since workplaces tend to be concentrated there are one-way peak loads morning and evening. Planned scatter of industrial zones and cross or circle routes presenting a spider's-web pattern might, in addition to staggered hours, avoid such loads.

to shop, get professional advice, or entertain themselves in the centre of town, and wherever school* or the place of work is some distance from the home. Travel for various purposes to the centre of town is catered for quite efficiently by the service of buses provided by the Midland 'Red.' The frequency and direction of these services and the time scale are given diagrammatically on Fig. 20. All bus routes run from the centre of town, so that the pattern of service is 'octopoid.' Some complaints were made (and are recorded in Chap. IX) that buses did not run frequently enough for housewives' shopping, but this referred to a restricted wartime service.

The pattern of travel to work is not so simple as the travel to the centre of town. The place of work may be in the centre of town, like offices and the main shops, but if it is a factory it is more likely to be in a suburban area. In that case, travel is often from one suburb to another. In large towns, like London and Birmingham, this inter-suburban travel may be very expensive, owing to the long distance involved, and may consume a fantastic amount of time† owing to changes of vehicle, the necessity of travelling right through the centre of town and/or the absence of direct routes.

Questions as to distances and costs involved in travel to work were asked in the sample house-to-house survey. In order to simplify the number of questions asked, these particulars of travel to work were only obtained for the husband and wife within each household. On this basis, *specific* information was obtained for 568 men and 163 women. In the other households a very large number of the husbands were in H.M. Forces; some were commercial travellers, transport workers, builders, road workers, etc., in which cases the distance of travel was variable. In the case of married women, the majority were not engaged in full-time regular employment, and in some households the husband and wife had both retired from work.

Where *specific* information was obtained, the answers have been summarized in Table I to bring out method and cost of travel and the length of journey. Table IA shows that the women tend to find work nearer their home than do the men. Whereas only about 36% of the women appear to travel one mile or more, the corresponding figure for the men is 60·4%. The average length of the journey is, however, short—only about 10% of the men travelled a distance greater than two miles. Tables IB and IC show that as many as 36% of the men walk and 38·5% cycle to work, while 61·5% of the women walk and 10·5% cycle. Since so many workers either walk or cycle, the cost of travel to work is nil for

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*Distance of schools from homes is dealt with in Ch. X.

†See Royal Commission on the Distribution of the Industrial Population (pars. 138, 187, etc.) for distance and time and money spent travelling to work in London and other large towns.

74·5% of the men and women taken together; and for only 7·5% is it greater than 2s. 6d. per week. Travelling to work within a city of moderate size like Worcester is thus very different to similar travel within a city of a million inhabitants like Birmingham. Of principal wage-earners living in Birmingham,* corresponding roughly to 'Men' in Table I at Worcester, only 28·9% travelled to work under one mile as against 39·6% at Worcester, and 51·3% under two miles as against about 90% at Worcester. The cost of travel to work shows, as summarized in Table II, yet greater disparity between the smaller and the larger City.

Of male householders living in Worcester as many as 75·5% incur no cost getting to work, while in Birmingham the corresponding percentage is about 45·1%. At the other end of the scale, only 5·75% of male householders in Worcester travel to work at a cost between 2s. 6d. and 5s., and only 2% at a cost above 5s. The corresponding percentages in Birmingham (even taking 3s. instead of 2s. 6d. as the lower limit) are 8% and 3·3% at least.

In calculating the relative inefficiency of the journey to work, distance (and therefore time taken) and money cost are not the only elements. Among the tests already suggested are comfort and timing.

In large towns, and where there are large factories, transport to work may fail on both these tests, owing to the peak load occurring because factories and departments of factories tend to open and close at the same time, without resorting to staggering of hours. At these times passengers have to crowd into public vehicles with many of them strap-hanging; or, not being able to get into the first few vehicles at all, are left to queue for long periods—perhaps in the rain.

Worcester has at present no overwhelmingly large factory and factory districts, and consequently, except in the centre of the City when shops and offices close, suffers little from peak loads on any route. But it is a matter to bear in mind when considering factory extensions and when discussing zoning in the last chapter.

Information on travel to work inside the City has an important practical bearing on plans to solve the traffic problems of the City. The fundamental factor is the siting of industry in relation to houses. The location of the main factories (shown in Fig. 25) indicates the existing scatter

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***When We Build Again* (Bournville Village Trust Research Publication), p. 70. The information collected here was given by a house-to-house survey, and is therefore comparable to the information collected at Worcester. Readers should beware, however, of comparing the information with information collected at the place of work. The extent of travel *away* from Worcester by train amounted to only 2% of our sample for men and 0·5% for women. Thus the number travelling into Worcester factories and other places of work is certainly much greater than travel out of the City. The percentages given in Table Iʙ, based on answers from people *living* in Worcester, would not correspond to information from people *working* in Worcester.

TABLE I

TRAVEL TO WORK

A. Distance travelled

Distance	Men	Women	Total
Up to ¼ mile	19·0%	29·5%	21·4%
¼ to 1 mile	20·6%	34·3%	23·6%
1 mile or more	60·4%	36·2%	55·0%
	100·0%	100·0%	100·0%

B. Method of travel

(Table showing method of travel for varying distances)*

Method	Men			Total	Women			Total	Total % men and women
	Distance in miles				Distance in miles				
	Up to ¼	¼–1	1 +	%	Up to ¼	¼–1	1 +	%	
Walk	87	46	17	36	91·5	82	13·5	61·5	42
Cycle	13	42	45	38·5	8·5	12·5	15	10·5	32
Bus	—	12	28	19·5	—	5·5	68·5	27	21
Train	—	—	3	2	—	—	1·5	0·5	1·5
Car or other means	—	—	7	4	—	—	1·5	0·5	3·5
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

C. Cost of travel

(Table showing cost of travel for varying distances)*

Cost per week	Men			Total	Women			Total	Total % men and women
	Distance in miles				Distance in miles				
	Up to ¼	¼–1	1 +	%	Up to ¼	¼–1	1 +	%	
0	100	88	63	75·5	96	93	32	72	74·5
Up to 1s.	—	1·75	7·5	4·75	2	3·5	12	6	5
1s. to 2s. 6d. ..	—	8·5	17·5	12	2	3·5	39	16	13
2s. 6d. to 5s. ..	—	1·75	9	5·75	—	—	13·5	5	5·5
Over 5s.	—	—	3	2	—	—	3·5	1	2
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

Note. The above figures exclude calculation of the cost incurred by the small percentage who travel by private car.

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*Figures expressed as a percentage of the total number of persons travelling each specified distance.

TABLE II

PROPORTION OF HOUSEHOLDERS INCURRING SPECIFIED COST PER WEEK FOR JOURNEY TO WORK

Worcester and Birmingham compared

WORCESTER (Chief male householder)		BIRMINGHAM* (Principal wage-earner)		
No cost	75·5%	No cost	45·1%	plus 11·0%†
0d. to 2s. 6d.	16·75 } 22·5%	0d. to 2s.	15·4 } 40·5%	
2s. 6d. to 5s.	5·75	2s. to 3s.	17·1	
		3s. to 5s.	8·0	
Over 5s.	2·0%	Over 5s.	3·3%	

which makes it possible for the majority of men and women to find employment at a convenient distance from their home. Many of these factories, however, require replacement or extension, and many are placed on sites unsuitable for industrial development. New industrialists, too, will contemplate establishing themselves in Worcester if they are offered attractive sites suitable and convenient for their type of work. In determining future plans for the allocation of factory sites, many factors must necessarily be taken into account and will be discussed in the final chapter on zoning. But the effect on length and cost of travel to work should be counted as a most important consideration.

There are also problems in internal *goods* transport as well as in internal personnel transport. In all towns, whether industrial or not, merchandise must be delivered (e.g. from the railway station) to shops or depots, and sometimes from the shop or depot (e.g. coal, milk, bread) to the homes of the consumer. Where a town is, like Worcester, a centre of a region, deliveries are also necessary into the region for a wide variety of goods not stocked in the country nor easily accessible. Regional deliveries thus add their problems to those of internal deliveries.

Delivery by vehicle requires the vehicles standing while loading or unloading. Such standing may add considerably to congestion, with loss of speed and accidents as results. Service roads at the back of shops, depots,

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*Op. cit., p. 74.

†Represents an additional number of persons whose place of work varies. These people are excluded in the case of Worcester.

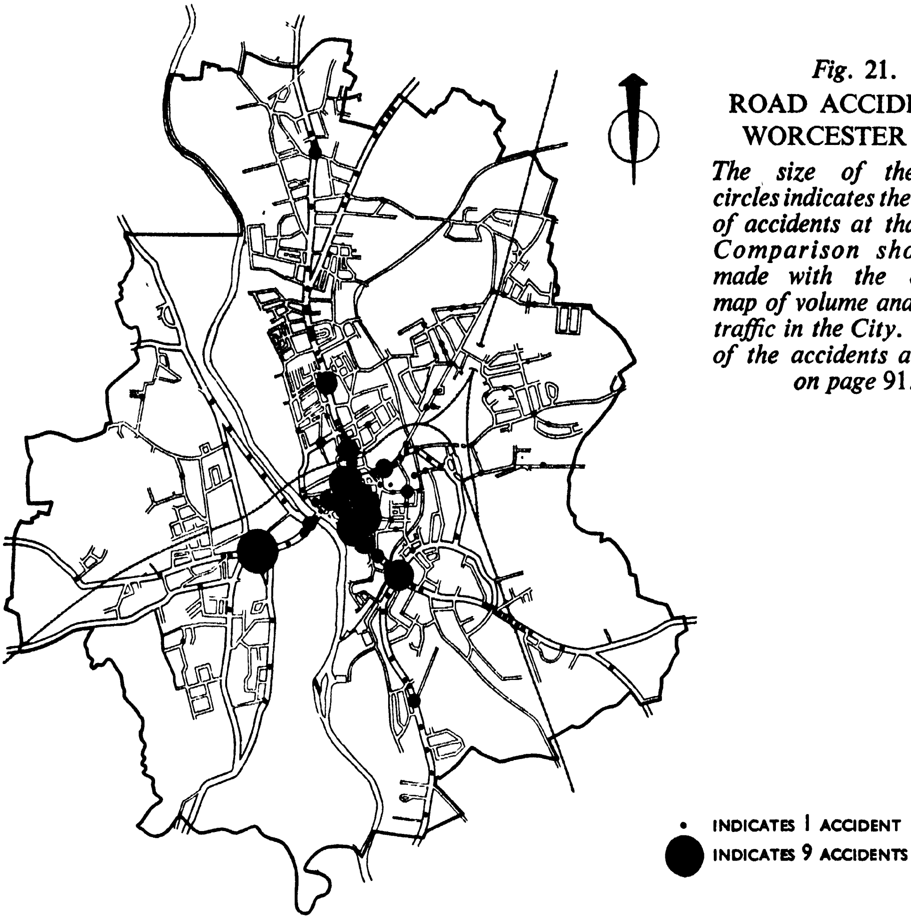

Fig. 21.
ROAD ACCIDENTS:
WORCESTER 1943

The size of the black circles indicates the number of accidents at that point. Comparison should be made with the opposite map of volume and type of traffic in the City. Details of the accidents are given on page 91.

or warehouses are possible solutions. The congestion and accidents in the trading streets (Figs. 21 and 22) might also be cut down by reducing delivery vehicles through a pooling arrangement between the traders.

§5. INDUSTRIAL TRAFFIC

By 'industrial traffic' is meant the traffic in goods due to industries in any place making products for a national or world-wide market or drawing materials and supplies from widely scattered areas outside the region. These industries within any place, after drawing in the materials and before sending out the product may, of course, transfer goods from one to another in course of manufacture. The particular problem in town planning that arises in consequence of this traffic is to prevent industrial materials and products on their way in and out of factories from congesting streets suitable only for normal internal, regional or

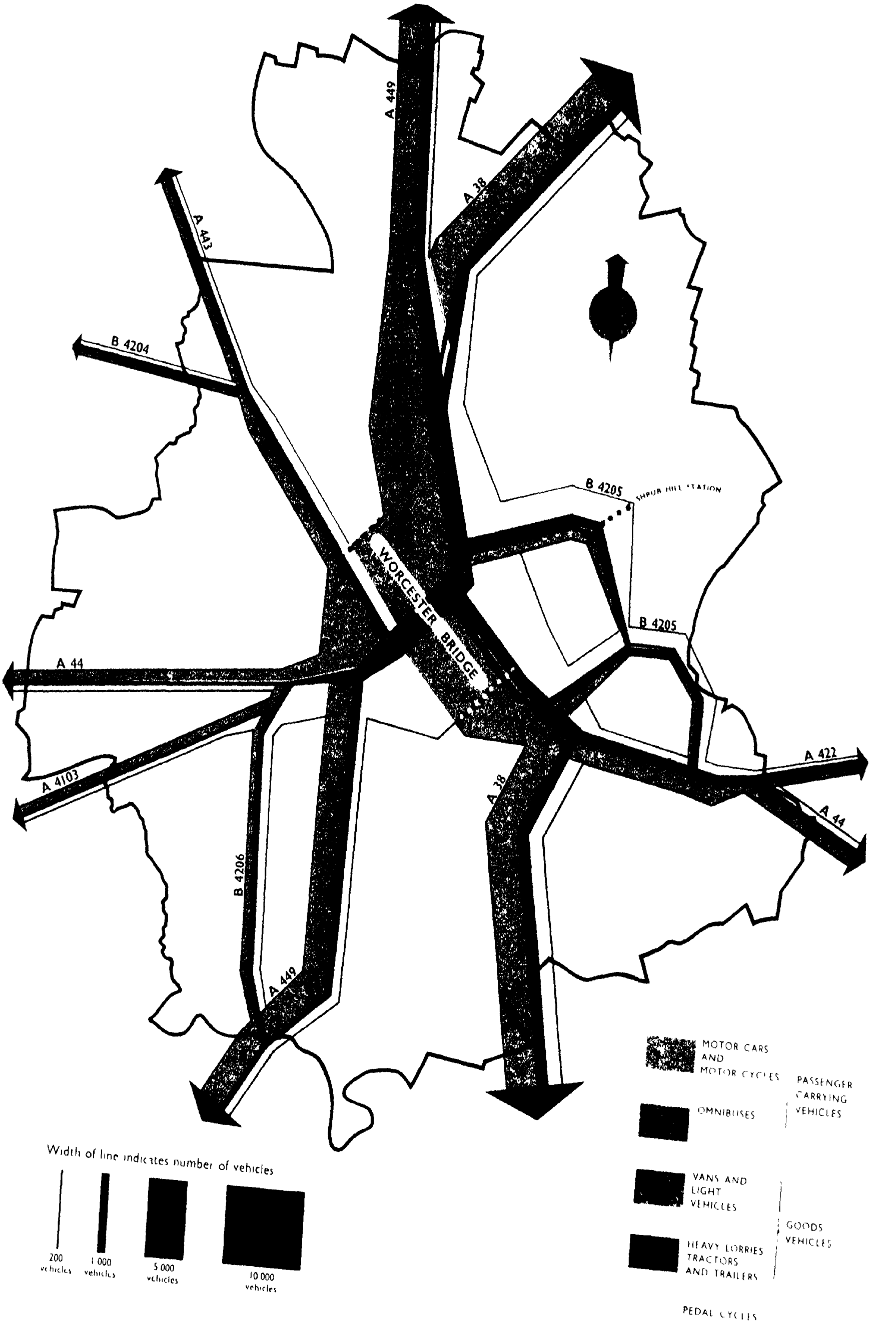

FIG. 22. VOLUME AND TYPES OF TRAFFIC ON MAIN ROADS IN THE CITY

Ministry of Transport Census, average daily traffic for a week in August 1938. Over Worcester Bridge, the volume of cycle traffic is indicated by distance between yellow dots and black line. The census showed route A38 to carry the heaviest tonnage of north-south traffic in the West Midlands, and Worcester Bridge an average of 19,290 tons per day.

through traffic, and thus diminishing speed and safety. If the factories are large or clustered together, or transfer goods along a specific route, the specialized traffic arising may be heavy in particular areas. Many of the larger Worcester factories distribute their products by road straight from their own factory in their own motor vehicles.

It is up to town planning to see that industrial areas have wide enough streets to take the traffic and that the traffic can find ready exits and entry away from the main ordinary traffic routes and centres.

Worcester has a number of industries with materials originating in and products dispatched outside the region. Indeed, it was said in Chap. IV that a (minor) economic advantage of the City was its central position in the country and its network of road and rail communications in all directions. This network can be seen clearly on Fig. 2. How far the City's factories that bring in and send out goods are placed so as to get immediate exits and entries without congestion of central areas can be judged by the map of Land Use within the City (Fig. 25). Most of the large factories in Worcester are seen to be ranged efficiently for this purpose along the side of the canal or along the railways (some with their own sidings) or on main roads near the edges of the City. But there are several exceptions which will be considered under zoning in the final chapter.

The type of industrial goods that is most liable to clutter up streets built for other purposes is heavy and bulky raw materials; and here railway and water transport offer an economic alternative to road transport. Table III analyses the total railway traffic forwarded out of Worcester and received in Worcester in six recent years. Two or three features stand out clearly.

(i) There is a much greater overall tonnage of goods coming in by rail than going out. In none of the last four years which were analysed (1937, 1938, 1939, and 1943) did the tonnage forwarded exceed 89,000 tons, and in none of these years did the tonnage received fall below 196,000 tons. On the average of all six years, the railway tonnage received was over three times the tonnage forwarded.

(ii) This heavy inward balance of traffic was largely (though by no means entirely) due to the coal and coke account. The coal and coke received averaged roughly 100,000 tons, the coal and coke forwarded (it was all coke from the gas works) averaged in those years only two or three thousand. This coal and coke was of course used for domestic as well as industrial premises, and the inward balance is a normal feature of all areas that do not mine coal.

(iii) Even when coal and coke are left out of account and also the relatively unimportant 'Other Minerals, Classes 1 to 6' (including bricks and pig-iron inward and scrap-iron outward), there is still a considerable inward balance of merchandise tonnage. This merchandise is largely the

TABLE III

GOODS TRAFFIC BY RAIL

(Worcester—G.W.R. and L.M.S.)

Year	Forwarded Traffic				Received Traffic			
	Merchandise, Classes 7–21	Coal and Coke	Other minerals, Classes 1–6	Total tonnage	Merchandise, Classes 7–21	Coal and coke	Other minerals, Classes 1–6	Total tonnage
1927	40,057	1,457	3,433	44,947	59,956	72,060	12,773	144,789
1931	33,827	2,864	3,477	40,168	71,020	65,279	8,553	144,852
1937	58,032	2,261	8,189	68,482	117,349	108,700	15,471	241,520
1938	55,287	2,086	5,306	62,679	93,791	94,417	8,169	196,377
1939	61,503	1,861	6,784	70,148	109,384	112,799	12,118	234,301
1943	74,032	8,354	7,265	89,651	98,914	128,652	10,041	237,607

semi-manufactured materials to be further worked up by Worcester's industries, such as iron and steel goods, tinplates, timber, skins, malt and barley, wheat, paper, but also includes final consumers' goods such as wines and spirits, hardware, and groceries, mostly consigned to shops.

Why is there an inward balance of tonnage, even in the case of manufactured and semi-manufactured merchandise? Partly it is due to the loss of weight in manufacture normal to the majority of industries (though not to brewing and hardly at all to tanning or printing), partly to the final consumers' goods included; but partly also to the fact that finished products are more likely to be transported by road than are semi-manufactured materials. Many manufacturers were found who brought their materials in by rail but sent their products out by road. This conclusion is of practical importance when planning the site of factories. Clearly such factories should be next the railway so as to get their materials without transhipment through the streets, and they should also be next wide main roads at the outskirts of the town so as to send out their products with minimum congestion.

Water transport was mentioned in Chap. IV as a minor economic advantage determining the future of Worcester, in addition to its central position and road and rail communications. Worcester possesses a canal along which several factories were sited in the past. But the canal is narrow and not much used today. And transport on the river Severn, though it has a long history in connection with Midland industries,* is, in any quantity, more of a future possibility than a present actuality. The heavy materials that are in fact brought into Worcester by water are at present confined mainly to petrol; and few goods of any sort leave the City down the river. Table IV gives for three years the general volume in tons of traffic up and also down the Severn, and analyses the up-and-down total into different sorts of cargo.

Approximately 45% of both up and down traffic passes between Gloucester and Worcester; 45% between Gloucester and Stourport; the remaining 10% being largely between Gloucester and Tewkesbury or Upton-on-Severn.

It was in 1921 that petrol imported at Avonmouth was first carried up the river and stored at Stourport or Worcester, and the increase in traffic since 1921 has been due entirely to this item. The grain traffic, the most important item in 1921, had by 1938 nearly halved in volume. This one-way trading is a serious consideration in the economic justification of Severn traffic. Ships return downstream mostly empty, and charges for

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*See W. H. B. Court, Reader in Economic History in the University of Birmingham, *The Rise of the Midland Industries*, pp. 3–13.

the upstream voyage must therefore cover idle overhead going down.*

Nevertheless there are projects afoot for encouraging additional traffic by deepening and widening the river, raising bridges, and constructing new locks so as to allow the passage of larger boats. At present the standard for craft proceeding as far as Worcester is 330 tons in respect of 'dumb' barges and 260 tons for motor barges. Plans now drawn up and sponsored by the Severn Commission (shown in detail in Fig. 56) would develop the existing waterway between Gloucester and Worcester to permit the passage of short sea-trading vessels of 500–600 tons' capacity —vessels that could trade direct with Cornwall or even the Baltic. It is further planned to develop the stretch of the river between Worcester and Stourport to allow navigation by barges of 300 tons' capacity. Worcester has been selected as one of the most convenient terminal sites, since it is within such easy reach of the Birmingham and Black Country industrial

TABLE IV

TRAFFIC ON SEVERN

A. General volume of traffic (tons)

	1921	1931	1938
Up	106,120	149,665	336,515
Down	39,627	20,253	5,923
TOTAL	145,747	169,918	342,438

B. Analysis of total cargoes up and down

	1921	1931	1938
Petrol	nil	51,903	228,711
Metal	1,195	2,651	8,447
Grain	75,030	57,568	48,923
Food .. .. .. Others	69,522	57,796	56,357
TOTAL UP AND DOWN .. (= 'A' TOTAL)	145,747	169,918	342,438

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*Many ships make a triangular journey. They come up-river loaded from Bristol to Worcester; return down empty to South Wales ports; then cross the Bristol Channel back to Bristol with coal.

area. At Diglis the city already has efficient docks and transit sheds (see Fig. 55) and considerable storage capacity for oil. The transit shed opened in 1944 should be a particular asset, facilitating especially the storage of grain. Since it is imported and also grown inland, grain has possibilities as a two-way traffic.

How far the additional trade secured by the proposed improvements will justify the additional expense involved is difficult to estimate. In view of road and rail competition, the profit obtained directly by charges and tolls on the additional traffic would probably not justify the cost to private enterprise. If, nevertheless, it is thought that the community generally would receive a net social benefit, then the Central Government may defray part of the cost and the improvement of the Severn waterway might be undertaken. But such a net benefit will probably only be recognized by the Government if the Worcester–Birmingham area should become industrially depressed. At present priority in 'development' is granted in Government policy rather to South Wales, the north-east coast, and other areas depressed in the years 1929–39. In short, it is not probable that any large-scale development of the Severn will affect the location of new industries in Worcester just yet. But river transport has in the past been hampered by the lack of adequate unloading and storage facilities on the riverside, and has thus remained unco-ordinated with the growing transport by road. This should be partly remedied at Worcester by the new transit shed.

If factories that use heavy materials are built near the river docks instead of the middle of the City, and better access is secured to the London Road and thus to the proposed new Trunk Road, then such an industrial zone near the docks with new dock facilities may well relieve the City streets of considerable congestion due to heavy industrial traffic.

§6. SUMMARY AND RECOMMENDATIONS

THE solution of transport problems does not lie solely with transport. Even the most efficient possible means of transport may be inconvenient, slow, costly, and unsafe if the places between which transport frequently occurs are places between which frequent transport should not need to occur. If, for instance, the homes of a large proportion of workers are separated by over five miles of more or less built-up area from their ordinary workplaces* and road transport is found to be slow and unsafe, it is not the fault of the transport but of the location, spacial relations, and zoning of works and homes.

Some recommendations that will result in greater efficiency in transport will thus be found in the final chapter on zoning. On the whole, Worcester

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*42·4% of residents of London County Council cottage estates worked over five miles away. (See Liepmann, *The Journey to Work*, p. 190.)

and towns of similar moderate size do not suffer much from any inefficiency of *internal* traffic due to these spacial relations. The moderate-size town offers in fact a distinct advantage in respect of nearness of homes to main shops and places of work.

But where towns like Worcester are industrial, are a centre of regional life and work, and also are at a nodal intersection of main roads, they suffer greatly from *through* traffic *superimposed* on their industrial, regional, and internal traffic. The following recommendations on transport arise from the proved results of this mixture of traffics in Worcester in reduction of speed, convenience, and safety. Recommendations 1, 3, and 4 also affect shopping facilities and are summarized in Recommendation 2 at the end of Chap. IX.

1. A ring road to take away the heavy north–south road traffic from the Foregate–High Street–Sidbury main artery;
2. Diversion of heaviest goods traffic to the railway and possibly the waterways. Co-ordination of road and water transport facilities;
3. Conveniently distributed parking places for private vehicles of shoppers, etc., from the region, and a well-planned bus station;
4. Service roads for loading and unloading of vans delivering within the City or to the region, and possibly pooling of delivery services;
5. Special alleys and/or precincts for pedestrians and shops, to keep shoppers and other pedestrians from congesting the main through-traffic artery.

Worcester has a special function as the County Town with a distinct area of influence in the agricultural region surrounding it. Whereas some of Worcester's present through traffic should be diverted from the City, there should:

6. Be an increase of transport facilities linking Worcester with its countryside and thus bringing trade to the City and a more varied life to the rural population. An increase of country bus routes and services at reasonable fares seems the readiest means to this end.

CHAPTER VI

THE LINKAGE OF CITY AND COUNTRYSIDE

As the County Town, Worcester is the administrative centre of the county and also the centre of various social activities. Since the ancient counties of England were formed, however, industrial towns, districts, and 'conurbations' have grown up which in many counties distort the simple pattern of a single central town, with perhaps a few subsidiary market towns, serving an agricultural community. Such perfect patterns, for example Herefordshire, still exist; but not in Worcestershire.*

Special study was made in Chapter I of the area which the City of Worcester could be said to serve as a centre. Tests derived from physical features, population densities, traffic gravitation, and, in addition, population trends and the structure of industry split the county into three areas. The most northerly forms in fact part of the industrial 'conurbation' centred on Birmingham, while the City of Worcester forms the centre of the most southerly of these areas. For most purposes, Worcester's area of influence also includes, as Fig. 5 shows, fringes of Herefordshire while excluding the district round Evesham. The area has a population about equal to that of Worcester itself.

Whatever the precise area of influence of Worcester, such influence of a central town over its surrounding agricultural countryside is a factor of wide import to the future of the nation. The exodus from countryside demonstrated clearly in Chapter III can be largely attributed to lack of specialized services and social amenities in the rural areas. Country people have not shared in the 'progress' in public utilities, higher education, shopping and

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*See *English County*, a survey of Herefordshire: The West Midland Group for Post-war Reconstruction and Planning (Faber & Faber).

entertainment facilities that has been economically possible where population is densely concentrated enough to support such progress.

The most practical solution is to make this urban progress more accessible to the country people, to link countryside to city more effectively by means of transport services, and facilities for the countryman visiting the city such as restaurants and, if he has a car, parking places. Regional transport was described in the last chapter; in this chapter the precise functions are analysed which Worcester City performs and might perform for its linked countryside.

To be a real social centre for the surrounding area, a town should offer a very wide variety of services, each of which helps the other in attracting the countryman.

The main functions which fall to the City within its area of influence are:

1. *As an absorbent of labour.*
2. *As a marketing and distribution centre.*
3. *As a centre for specialized social and professional services.*
4. *As an educational and entertainment centre.*

Official returns from the Ministry of Labour, Local Authorities, and Transport Companies, supplemented by the circulation of a comprehensive questionnaire to all the Women's Institutes in the area, are the chief sources of information as to the degree of success with which Worcester fulfils these four functions.*

§1. WORCESTER AS AN ABSORBENT OF LABOUR

ENGLISH rural areas are commonly deficient in providing employment other than in agriculture or domestic service. People in these areas who find no demand for their labour in their own village will seek employment elsewhere. They will look first to *local* centres of employment. If transport is convenient, they will be likely to travel daily to and from their work; failing that, they may migrate first to a centre of industry in their own region, then perhaps to other parts of the country.

Within the rural area of ten miles radius round Worcester, there are few outlets for labour in any industry apart from agriculture and the various 'service' industries centred on the towns. Malvern is an exception in so far as attempts are now being made to develop its manufacturing industry.

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*See App. III.

During the war, the numbers employed in manufacturing industries in Malvern rose by about 37% through the introduction of new factories* considerably larger in size than previous units. Part of this new development may remain, and in that case will help to redress the lack of balance in employment. The previous position is shown in the following percentage distribution of workers over the three main groups of industry in 1931:

	Malvern	England and Wales
I. Agriculture	2·8%	6·0%
II. Mining and Manufacturing ..	13·9%	38·2%
III. 'Service' Industries	83·3%	55·8%
	100·0%	100·0%

The unusually large number employed in 'service' industries reflects the town's main function, which is that of a spa and residential area largely for retired people with private means.

The presence of Employment Exchange branch offices in a town denotes that it is of some local importance as a centre for employment. In the Worcester area, such towns are Droitwich, Pershore, Ledbury, and Bromyard. Upton-on-Severn and Colwall come under the administration of the Malvern branch office. In 1939 the Droitwich branch office showed a total of 1,700 insured persons on its books, engaged almost entirely in 'service' industries and agriculture. There was no manufacturing industry in the neighbourhood, the prosperity of the town being entirely based upon its brine baths, and its reputation as a health resort. Pershore had approximately 2,200 insured persons, of whom 1,220 were engaged in agriculture. The remaining 980 were all employed in the 'service' industries characteristic of a small market town, except for 140 persons employed in one engineering firm. During the war, opportunity of employment in the town was increased by the expansion of this engineering firm to double its former size and by the development of a canning company which provides employment for sixty women. At Ledbury, apart from two large M.A.P. factories established during the war that are not remaining, two factories employed in 1943 over a hundred persons each—one, employing predominantly women and girls, makes jam, and the other cider. There are no factories at Bromyard.

Although these smaller towns provide employment for a certain number of persons living in their immediate vicinity, they do not offer either the variety of choice, the level of wages, or the opportunity for promotion which may be found in centres the size of Worcester. Thus, within the area under review, Worcester is clearly the strongest magnet in attracting labour from rural districts. In contrast with the declining trend in the rural areas, the city's population has been expanding over recent years and the city has developed into an industrial centre of considerable importance. Its position as the nodal point for transport and communication facilitates access from most parts of the area.

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*This does not take into account the wartime Government establishment, which was responsible for bringing a great number of people to work in the town.

Some indication of the extent of the daily journeys to work in Worcester from different parts of the area has been given in Chap. V. Railway statistics have been analysed in order to distinguish those people travelling for purposes of work; and the results, shown in Fig. 19, indicate that a large number come from Malvern and smaller numbers (in order of size) from Ledbury, Evesham, Kidderminster, Bromsgrove, Defford, and Bromyard.

Statistics are not available to provide exactly comparable information about travel to work by bus. The number of early-morning buses, however, are shown separately in Fig. 17. If we assume that factory workers must reach Worcester by 8 a.m., there were in 1939 buses early enough from Hallow, Malvern, and Bromsgrove only. Office and shop workers, etc., requiring only to arrive by 9 a.m., come from a wider choice of places. The Midland 'Red' bus company estimate that half the passengers on these buses are schoolchildren and the other half workers in Worcester. No other company operated buses for workpeople before the war. During the war, however, a number of special buses have been operating between outlying towns and villages and factories in Worcester: notable examples are the services bringing workers in from the surrounding rural areas to a Government factory in Worcester and to a factory a few miles outside Worcester. As a wartime arrangement this will not be continued. On the other hand, employees were already before the war tending to undertake longer journeys to work, and this tendency is likely to continue if early buses from a wider scatter of places are instituted.

In measuring the extent to which Worcester attracts the population of surrounding areas to work within its boundaries, the obvious sources of information appear to be a combination of the Census of Population, which tabulates people by their residence, and the Ministry of Labour Count of Insured Persons, tabulating mainly by place of work. This combination is unfortunately not feasible, since the Population Census and Ministry of Labour area are not normally coincident. Comparison must therefore be confined to the proportion of men, women, boys, and girls employed within the framework of the insured population covered by the Ministry of Labour. The number of insured men form a more stable proportion of the total male population of working age and capacity than the proportions which insured boys, women, and girls form of the total population of working age and capacity within their respective age- and sex-groups. It follows that the men insured form a more stable proportion of the total population than do the total insured. Therefore in Table I the number of insured men has been taken as 100, and a comparison is made of the age- and sex-structure of the insured population within the Worcester Employment Exchange area and the areas covered by the Exchange branch offices, by expressing the number of boys, women, and girls as a percentage of the number of men.

TABLE I

COMPARISON OF AGE AND SEX-STRUCTURE OF INSURED POPULATION (July 1939) OF AREAS WITHIN WORCESTER'S INFLUENCE

Numbers in each area expressed as a percentage of the number of men insured

Employment Exchanges and Branch Offices	Men 18–64	Boys 16–17	Boys 14–15	Total boys	Women 18–59	Girls 16–17	Girls 14–15	Total girls
Worcester . .	100	8·0	7·5	15·5	36·4	6·6	7·7	14·3
Pershore Area . .	100	7·0	5·0	12·0	24·8	1·9	0·6	2·5
Droitwich Area . .	100	6·1	4·3	10·4	38·3	5·2	2·6	7·8
Malvern Area . .	100	5·8	5·1	10·9	32·0	4·8	3·4	8·2
Bromyard Area . .	100	8·2	5·4	13·6	8·2	1·4	0·2	1·6
Ledbury Area . .	100	6·3	6·3	12·6	18·4	2·8	1·5	4·3
Great Britain . .	100	6·4	4·7	11·1	36·0	5·6	3·9	9·5

Comparing Worcester with all its surrounding rural areas, the following conclusions can be drawn from Table I.

1. A higher proportion of girls of all age-groups find employment in Worcester than in any of the surrounding rural areas. The differences here are remarkable, particularly when the not entirely rural Malvern and Droitwich areas are neglected. Worcester employs over three times as many girls in proportion to adult men as any of the purely rural areas surrounding it.

2. A higher proportion of adult women find employment in Worcester than in any surrounding rural areas except Droitwich.

3. A higher proportion of boys of all age-groups find employment in Worcester than in any surrounding areas, except sixteen- to seventeen-year-olds in Bromyard.

TABLE II

STOCK MARKETING: WORCESTER TURNOVER COMPARED WITH KIDDERMINSTER AND HEREFORD

Data for four months, December 1944 to March 1945 inclusive

	FAT STOCK				STORE STOCK				
	Cattle	Calves	Sheep	Pigs	Cattle	Cow and Calf	Calves	Sheep	Pigs
Worcester ..	1,603	1,192	8,778	1,437	744	728	425	2,189	3,513
Kidderminster ..	430	347	6,203	854	603	339	242	2,213	2,917
Hereford	702	493	18,892	993	6,603	1,700	1,217	9,543	5,450

The fact revealed by these figures that the rural areas are extremely deficient in outlets for the employment of women and young persons is no new discovery. The questionnaire circulated to Women's Institutes, to which reference has already been made, included a number of questions designed to find out the views of the villages on this point. Although the answers do not allow of statistical analysis, they present very strongly the conviction of these rural communities that the lack of any jobs other than on the land or in domestic service proves a strong incentive to the more ambitious to move elsewhere.

§2. WORCESTER AS A CENTRE FOR MARKETING AND DISTRIBUTION

(*a*) LIVESTOCK MARKETING

It is clearly in Worcester's interest to maintain its reputation as a good marketing centre. Not only has the Corporation a financial interest in making the maximum return on its property, i.e. site and equipment, but it is in the interest of trade and business of the City that farmers and their families shall make regular visits, make business contacts, and spend money in the shops. To increase farmers' purchasing power and the business which they bring to the City it is necessary not only to maintain the market but to see that it functions efficiently. Arrangement of sales, with due regard to the convenience of producers and buyers, to the quantities of stock to be handled, and to transport, advertisement, etc., should bring best market prices and encourage good production.

The importance of the livestock market in Worcester is evident from the turnover figures given in Table II. In this table, the total turnover of both store and fat stock for the four-month period December 1944 to March 1945 inclusive has been compared with turnover in the Kidderminster and Hereford markets. The comparison brings out clearly the predominant importance of the fat-stock market at Worcester for cattle, calves, and pigs. The turnover of sheep sold for slaughter is, however, considerably smaller than at Hereford. For store stock Worcester has a larger market than Kidderminster but is not so important as Hereford. These figures indicate the size of the wartime livestock market at the three towns, but none are available for comparing differences in value of the classes and types of stock marketed, and no allowance is made for the seasonal nature of sales.

Since the fat-stock market is of predominant importance in Worcester, attention should be paid to provision of an efficient abattoir. Before the war the Corporation abattoir was used only by two Worcester firms; most butchers had their own slaughterhouse or shared with another butcher and did their own manufacturing. There were, in 1944, 77 butchers' shops in Worcester including the five branches owned by the Worcester Co-operative Society and five by one large firm. The Worcester Co-operative Society and another firm were important wholesalers before the war, and there was one wholesaler for imported meat only. The butchers during the war acted only as purveyors of meat with fixed allocations, fixed sales, fixed wholesale and retail prices, served by one Retail Buying Committee under the Ministry of Food. Normally the Local Authority has power to license slaughterhouses in the City, but under wartime arrangements all slaughtering had to be done at the public slaughterhouse which serves not only Worcester but also the Malvern, Droitwich, and Upton-on-Severn districts. The Retail Buying Committee acts as slaughtering contractor for the Ministry of Food, and most of the retail members are employed part-time as slaughterers, allocators, weighmen, etc., to assist the permanent staff. The profits from the slaughtering contract are distributed to members in proportion to their deposit, which also acts as a security against their credit orders.

TABLE III

WEEKLY ABATTOIR TURNOVER, 1943-4, AT WORCESTER, KIDDERMINSTER, AND EVESHAM

Depot	Aggregate turnover	Constituent Retail Buying Committees	
	£		£
Worcester and district	6,250	Upton	420
		Droitwich	543
		Malvern	1,300
		Worcester	3,987
			£6,250
Kidderminster	3,567	Kidderminster	3,567
Evesham	2,473	Pershore	545
		Moreton in Marsh	532
		Evesham	1,396
			£2,473

The 1943–4 figures of meat slaughtering (in £s) are given in Table III, where the turnover at Worcester is compared to that at Kidderminster and Evesham. These figures, as also those in Table II, give only the wartime picture when all livestock production was very much lower than previously. With peacetime production the Corporation Abattoir as it exists at present could not possibly meet the demand, even for Worcester butchers alone. The needs of the City constitute about 65% of the needs of the larger district including Malvern, Droitwich, and Upton-on-Severn.

Not only will the existing abattoir need to be greatly extended in order to meet a peacetime demand but it will need to be better planned —provided with up-to-date equipment and with the necessary facilities for meat storage, etc., with adequate and convenient space for transport vehicles. It might be advisable to plan its location in conjunction with a factory for meat processing and by-products. The existing site, though quite inadequate, has one point in its favour—it is near the existing Cattle Market.

TABLE IV

RAIL TRANSPORT OF LIVESTOCK

	Number of wagons				
	1927	1931	1937	1938	1939
WORCESTER					
Forwarded	902	620	472	385	428
Received	342	350	310	205	196
MALVERN LINK					
Forwarded	16	16	13	9	16
Received	93	79	57	26	41
DROITWICH					
Forwarded	54	18	9	—	7
Received	174	112	60	62	59
PERSHORE					
Forwarded	260	143	30	17	34
Received	256	164	28	21	37
STOURPORT					
Forwarded	35	20	5	—	1
Received	66	42	23	16	17

The existing location of the Cattle Market is convenient in so far as it is near the railway and is accessible to farmers coming by road from districts south-west, west, north-west, and north of the City without necessitating a journey through the City centre. Good access from the west of the City is more important than from the east. At the same time, farmers attending the market are only a very short distance from the central shops.

Space and layout should facilitate loading, unloading, and quick dispatch. Recent tendencies show that road transport is being more extensively used for marketing purposes, and there is less dependence on rail facilities. The figures given in Table IV reflect this tendency. During the war, with decreased cattle production and market turnover, the transport of livestock was much lower. There is a particularly noticeable drop in the number of wagons forwarded from Worcester. Before the war much of the cattle was sold to Black Country butchers who took the live cattle by rail, whereas now all cattle sold for slaughter go straight to the abattoir and the meat is later transported by road.

(*b*) SERVICING AGRICULTURE

Provision of hop-marketing facilities is the most important service which Worcester renders its surrounding area as a marketing and distribution centre for agricultural crops.

The whole system of the buying and selling of hops is organized by the Hop Marketing Board, which also controls all orders to farmers. This method of organization necessitates good facilities for storing and sampling hops; if the farmers have not got adequate storage accommodation of their own, they must send their hops into the nearest receiving centre. Worcester is the receiving centre for its surrounding districts of Herefordshire and Worcestershire.

The Worcester Hop Market is not a market in the usually accepted sense of the word. It consists in the provision of storage, sampling, weighing facilities, etc., within the City. The Corporation owns a large warehouse, and this is used for the storage of hops sent in by merchants and growers, mainly from districts lying west and south-west of the City, e.g. (see Fig. 16) from Bromyard, Ledbury, Leigh Sinton, and the Fromes Hill area. The Worcester Corporation warehouse has sufficient capacity to store some 9,000–10,000 pockets of hops. (On an average a pocket of hops = 1½ cwt.) In addition, the private warehouses in Worcester store about 8,000 pockets. The Corporation levies a delivering and receiving charge, a storage charge, and a sampling and a weighing charge for all hops which it stores. When merchants store in their own warehouses the Corporation is still entitled (under a law which dates back some two hundred years) to levy a charge for delivering and receiving (9d.) and for weighing (3d.) on every pocket of hops coming into the City.

Farmers and merchants bring hops into the City by road; but transport of hops out of the City is almost entirely by rail. Buying of hops is done by factors through sampling, and all transactions are made in London. Notification of sale is sent to the Corporation, who then arrange for transport of the hops from the warehouse to the railway station.

Other agricultural produce (which from the Worcester district is predominantly fruit and market-garden produce) is only distributed from Worcester if it is grown in its immediate vicinity. For instance, all districts around Pershore distribute direct from there to all parts of the country, and the tonnage of agricultural produce forwarded by rail is much higher comparatively from Pershore than from Worcester; for a considerable proportion of the agricultural produce coming into Worcester would be absorbed by its own population. A certain amount of sugar beet is brought into Worcester (by road) and is then stored at the railway warehouse until dispatched to the Kidderminster factory.

There are no special warehouses in Worcester to facilitate the collection and distribution of fertilizers and feeding stuffs such as cattle cakes. The railway warehouse is used for this purpose and also the new Severn Commission transit shed which stores fertilizers brought up the river from Avonmouth. These goods are brought into Worcester by rail or by river, and are then distributed by merchants using their own road transport.

Similarly there are no special grain-storage warehouses in Worcester, though the Severn Commission transit shed is given over mainly for this purpose. Home-grown grain is brought down the river from Stourport, and imported grain is brought up the river.

Besides providing facilities for the marketing and distribution of livestock and crops and the distribution of fertilizers, etc., market towns should cater for the supply and repair of agricultural implements. These services are often more conveniently and appropriately supplied by the smaller towns. In Worcester there is no firm of any size manufacturing and repairing agricultural implements, though two small firms do something in this way; but the City is the headquarters for several distributing agents serving the south Worcestershire area. Transport of agricultural implements both in and out of Worcester is relatively small compared with both Evesham and Pershore, where there are large firms actually engaged in making and servicing implements.

Thus Worcester renders important service to its surrounding countryside by provision of good facilities for dealing with livestock and hops; it might give further service to agriculture by the establishment of a factory for manufacturing and servicing agricultural implements. By concentrating these services within the City, farmers are enabled to combine their marketing visits with visits for other purposes of business and shopping, yielding mutual advantage to both City and countryside.

As a general warehousing centre, however, and as a centre for the distribution of agricultural produce in general, Worcester is not so important. In the case of agricultural produce, particularly where there are well-organized co-operative marketing arrangements in force, it is often more convenient and more economical for the farmer to distribute from a smaller local centre, so that comparatively little benefit would accrue from attempting to enlarge markets of this nature in Worcester.

(*c*) RETAIL DISTRIBUTION

The advantage of combining different purposes in one visit to Worcester can also be applied to shops. The farmer who comes in to sell will stay to buy if the City can offer a variety of goods not found elsewhere within the farmer's area. Under similar conditions, the countryman who comes in for entertainment and professional services will also stay to buy. Worcester is in fact considered the chief shopping centre of the area, and many country folk come in for shopping only. Information from Women's Institutes demonstrating these facts is discussed in § 5, and shown diagrammatically in Fig. 23. The efficiency of Worcester retailing is examined in detail in Chap. IX.

§ 3. WORCESTER AS A CENTRE FOR SPECIALIZED HEALTH AND PROFESSIONAL SERVICES

WORCESTER, with a concentrated population of over 50,000, is obviously suitable for the location of those specialized social provisions which need to be supported by a population greater than that centred on the smaller towns of its surrounding rural areas. This is shown in the first place by the distribution of medical and other health services, described in this section. Education services are taken up in § 4.

Within 'the area of Worcester's influence,' persons requiring general hospital treatment (see Chap. VIII) go mainly to the Worcester Royal Infirmary. This provides general hospital facilities for both in-patients and out-patients, and in addition has specialized radiological, orthopaedic, ear, nose and throat, dental, and pathological departments. It also has a clinic for the treatment of venereal diseases. This is the only general hospital in the area apart from that at Malvern. The Malvern Hospital provides accommodation for about twenty-two in-patients; it has a special physio-therapy department, an X-ray department which functions weekly under the direction of an expert from the Worcester Royal Infirmary, and in addition has a consultant service by which advice may be obtained from Birmingham medical experts paying regular visits to Malvern. The hospitals at Droitwich meet only one special need. As a health centre for rheumatic cases, the town has a hospital and clinic for its visitor patients and a special hospital, also treating rheumatism, operated on behalf of the Birmingham Hospital Saturday Fund.

People living on the fringes of the area do not all go to the Worcester Royal Infirmary but go instead to a hospital in another centre of population which may be equally accessible such as Hereford, Bromsgrove, Redditch, and Evesham.

The extent to which the Worcester Royal Infirmary serves the area surrounding the City is shown by the contributions to its Contributory Scheme. In 1941, 1942, and 1943, total contributions amounted annually to approximately £15,000, £22,600, and £24,800 respectively, of which 42% was contributed by persons living outside the City. The Area Laboratory attached to the Infirmary has special arrangements for the service of patients at Knightwick, Malvern, Droitwich, and Stourport.

In addition to the various specialized services provided by the Worcester Royal Infirmary, other specialized services are available in Worcester, as, for example, a hospital concerned solely with the treatment of eye complaints. For complicated maternity cases, the existing provision at Worcester was in 1944 inadequate, and consequently the City cannot here serve County districts. For the treatment of mental cases, Powick Hospital, serving an extensive area, is within about three and a half miles of the City.

More specialized treatments, such as neurology, deep X-ray, and cancer treatment, which cater for the needs of an extensive area, are only supplied at a provincial level. Birmingham hospitals make provision for cases requiring treatments of this kind, and Worcester, lying within easy reach, naturally looks to them for this provision.

Isolation hospitals and sanatoria for infectious diseases and tuberculosis are for obvious reasons not located inside towns. The City Isolation Hospital (lying just outside the Worcester boundary) serves primarily the needs of the City but at the same time allocates a certain number of beds for County patients from the scattered population of Martley and Tenbury Rural Districts. As the population of the rural districts south and south-east of Worcester is slightly more concentrated, it is sufficient to support small isolation hospitals near Upton-on-Severn and Pershore.

The distribution of doctors within the area under review is somewhat confused by the presence of the two health resorts of Malvern and Droitwich. In Kelly's Directory for 1939, 25 doctors are recorded as living in Worcester, 14 in Malvern, and 13 (including specialists in rheumatic diseases) in Droitwich, whose population is only one-tenth that of Worcester. In contrast, the distribution of dentists was much more in accordance with the populations of the towns in which they lived. There were 17 living in Worcester, 7 in Great Malvern, and 3 in Droitwich. From these headquarters, many of them had regular consulting days in surrounding towns such as Pershore, Ledbury, and Bromyard.

Worcester's importance as a commercial and business centre is also revealed by the concentration of professional offices, such as those of solicitors. Worcester had 26 solicitors' offices, as against only 6 at Malvern and 3 at Droitwich and at Pershore. There were 31 offices of insurance companies in the City, only 1 at Malvern, and none elsewhere in the Area. At Worcester 14 estate agents were located against 2 only in Droitwich, Malvern, and Ledbury and 1 at Bromyard. A further example of the concentration of specialized commercial services is the existence of 6 photographers' shops at Worcester, contrasted with only 1 at Droitwich, Malvern, and Ledbury.

§4. WORCESTER AS AN EDUCATIONAL AND ENTERTAINMENT CENTRE

WITHIN the country districts of the 'area of Worcester's influence' there were in 1944 approximately 9,000 children receiving elementary education. In the past, these children have mainly stayed at the same school until the age of 14. However, over recent years steps have been taken to centralize and make special provision for the senior children, and reorganization of this nature will be inevitable under the new Education Act. At present both the modern County Senior School at Pershore and the school at Upton-on-Severn make special provision for senior children, whom they draw from schools of the surrounding districts.

Secondary School education has been available only to a small minority. Apart from the Hanley Castle Grammar School for boys, situated north of Upton-on-Severn, the only Secondary Schools within the area (except private schools) are the two Grammar Schools in Herefordshire at Bromyard and Ledbury. The majority of special place awards made by the Worcestershire County Council to children living in this area have been to schools in Worcester. On an average 20 special places are awarded annually by the County to the Girls' Secondary School, 15 to the Royal Grammar School, and 4 to the Cathedral King's School. The total of special place county children in 1944–5 on the registers at these schools was 120, 72, and 20 respectively. In the northern part of the area a few children go to the secondary schools at Kidderminster, maintained or aided by the L.E.A., and to the Hartlebury Grammar School for boys; and in the south and south-west parts of the area, awards are made tenable at the Bromyard, Ledbury, and Tewkesbury schools.

Figures given later, in Chap. X, analyse in greater detail the extent to which the Worcester schools, both City Council and independent, serve the surrounding districts of the county.* They show quite clearly that

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*See Tables II and III of Ch. X.

Worcester's educational facilities are important within an area far wider than the City itself; they serve in the main the central and southern parts of Worcestershire, but some of the independent Worcester schools draw children from beyond the county. Of all children aged 14 and over at school in Worcester, as many as 43% are not residents of the City. This figure includes about fifty county children awarded special places at the Worcester Junior Technical School and Junior Commercial School. Prior to the war, the Day School of Art also took pupils from county districts. Other facilities for technical education within the area consist in a School of Art providing full-time courses for day and evening students, and an Evening Technical School both at Malvern, and evening commercial classes held in the Town Hall at Droitwich.

Fig. 17, showing pre-war bus services scheduled to arrive daily in Worcester by 9 a.m., indicates the towns and villages from which children had convenient access by bus to schools in the City. Children from Pershore have access by train.

It is impossible to separate travel for other educational and for recreational purposes from travel for shopping, marketing, or other needs. Worcester's functions as a marketing and shopping centre, as a centre for specialized health and professional services, and as an educational and entertainment centre may all be fulfilled by a joint-purpose visit, and are thus interdependent. The late bus services which leave Worcester at 9 p.m. or after are, however, worth showing separately (Fig. 17), as they indicate the extent to which the surrounding country districts are able to take advantage of City evening functions, such as dances, cinemas, and theatre. Pershore, Bromyard, and Ledbury have their own small cinemas to serve their locality; these are the only cinemas in the area except for those at Droitwich and Malvern, where special provision of recreational facilities is required for visitors. Malvern provides two cinemas, a theatre, and good facilities for dances. The pattern of these late evening services strongly emphasizes the point, revealed by the normal services, that Worcester's influence on—and importance to—the countryside is greatest in those districts lying west of Worcester.

The high number of registered borrowers at the County Library in Worcester is yet another fact indicating the 'cumulative' importance of Worcester to the surrounding areas, due to it being a centre for many different services. About 570 registered borrowers hailed from rural areas north-west of the City, 570 from the north and north-easterly (including (see map, page 239) Bromsgrove, Droitwich, Hartlebury, Ombersley, and Tibberton), 400 from east and south-east districts of sparse population, and 350 from the south-west districts, including Kempsey, Leigh Sinton, and Powick (Malvern has a good library of its own): this makes a total of 1,900 persons. Clearly very few people would make a special journey into Worcester to obtain a book from the library (particularly as branch libraries within the area are established at Pershore, Upton, and Droitwich) but would have other purposes in view as well.

The importance of the entertainment facilities of Worcester to the surrounding countryside is dealt with further in later chapters particularly Chap. VIII, § 3.

§ 5. THE GENERAL PICTURE

ANSWERS to the questionnaire (see Appendix III) issued to the Women's Institutes and to the Parish Councils of south and central Worcestershire make it possible to present a general picture of the linkage of the City with its surrounding countryside. Of the Women's Institutes 70% answered, though there was less response from the Parish Councils. The answers were often a matter only of personal estimate, but they are sufficient to show the general pattern of travel. Questions were asked whether people from the villages went to work in Worcester; what shopping centre was used beyond the village shops; and where recreation and entertainment was sought. Fig. 23 shows by arrows which villages made use for these purposes of Evesham, Stourport, Kidderminster, etc., or of Worcester, or of sub-centres in the Worcester area of influence. The direction of the arrows supports the demarcation of the area of Worcester's influence, arrived at in Chap. I.

The reply of highest frequency from villages linking with Worcester was travel for all three purposes, and the next highest frequency, travel for shopping only. It is clear that shopping facilities are Worcester's greatest 'draw,' though persons travelling in to work may often stay for recreation after their work. The cumulative influence of Worcester's offering a variety of different attractions is here again in evidence.

The smaller centres within Worcester's influence—Malvern, Pershore, Droitwich, and Upton (shown by hollow circles on the map)—draw people mainly for shopping and recreation, or recreation only. Apparently, if there is a cinema or club available near by, many people will not go further afield, partly because of transport difficulties in the evenings. Shopping facilities, however, are offered in greater variety in Worcester than in any other place in the area, and transport to Worcester is available during the daytime to serve this purpose.

Indeed, Worcester cannot expect to influence all the aspects of life for which villagers in its 'area of influence' make an expedition from their villages. There will be decentralization in small market towns and possibly focal villages* much as there is decentralization into neighbourhood

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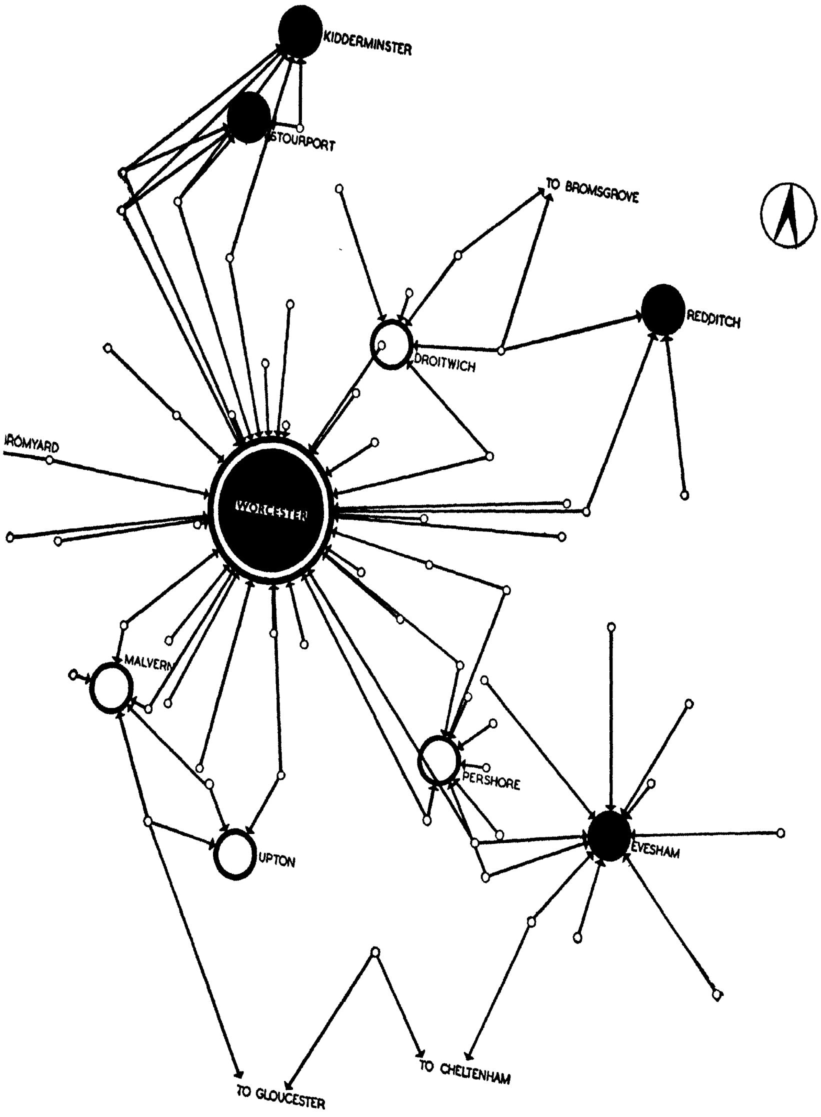
*See *English County*, a survey of Herefordshire: The West Midland Group for Post-war Reconstruction and Planning (Faber & Faber).



○ CENTRES INSIDE WORCESTER'S AREA OF INFLUENCE

● CENTRES OUTSIDE WORCESTER'S AREA OF INFLUENCE

Fig. 23. PATTERN OF VISITS FROM COUNTRY PLACES TO WORCESTER AND NEIGHBOURING CENTRES

Each small circle is a village, and the arrows point to the centre where villagers go for shopping, work, or entertainment. The larger white circles are towns generally within Worcester's area of influence.

units within the City, and the services decentralized may be much the same.*

Yet Worcester may exert a profound influence in supplying all those needs of the countryside which require a concentrated population for their effective organization. Such are all the more specialized needs of modern civilization in professional and social services, in education, entertainment, and shops. If people are to find satisfaction in a life on the land, it is to county towns like Worcester that they must look for relief from that life's inherent isolation.

§6. RECOMMENDATIONS

WORCESTER serves its own interests by fostering those services most likely to be appreciated by the agricultural population of its surrounding areas. The following recommendations give some of the most important ways by which Worcester can serve its neighbouring countryside and at the same time bring increased trade and business into the City.

1. Worcester should take positive steps to retain its reputation as a good livestock marketing centre. Particular attention should be paid to the layout and equipment of the Cattle Market, to transport facilities, and to efficient market organization.

2. Owing to the predominant importance of the fat-stock market, Worcester requires a new abattoir and one which will be sufficiently large to deal with all cattle sold in the Worcester market for slaughter. The site selected should adjoin the Cattle Market and should be provided with all up-to-date equipment, good storage facilities, and with adequate and convenient space for transport vehicles.

3. The establishment of a factory for the manufacture and servicing of agricultural implements might well be of mutual advantage to both City and countryside.

4. In retail distribution, and in social, professional, and recreational facilities (as in marketing), the provision made by Worcester should be sufficient in variety and extent to meet the needs of the surrounding population. A concentration of these facilities serves the interests of farmers and their families and other people from the country districts by enabling them to combine different purposes in one visit to the City.

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*See Ch. IX and XII.

CHAPTER VII

HOUSING

We are faced in the coming years with a programme for raising the quantity and quality of houses for the whole population. It is of the essence of planning that this programme should be preceded by careful investigation and analysis.

The preliminary work consists of several steps. It is first necessary to gain detailed factual information on the quantity and quality of existing housing; but this information can only guide future policy after it has been related to projected trends in the size and family composition of the population. Certain sanitary and room-space standards must next be applied to discover the total needs. Then, by comparing the total supply of satisfactory houses with the total need, it is possible to determine the scale of the new housing effort required.

The next stage is to find out in general terms where the new housing development should be located. This involves two primary considerations which are often at variance with each other. The first is the possible and desirable density of houses in the different parts of the city; the second the accessibility of each area to public open spaces, places of work, shops, churches, and schools.

Both considerations are broached in this chapter: general problems of access to the City centre and to the countryside are discussed in detail; but access to work and to other outside activities are covered in Chapter IV and other appropriate chapters.

In presenting the results of the housing survey, several new devices have been used. Table I is a chronological chart showing the progress made between the wars in the battle against bad housing and overcrowding, at the same time indicating a consistent gap between progressively rising standards and the supply of new houses. Tables II and III adopt a layout automatically showing the number of houses which would be condemned as overcrowded by the acceptance of three particular standards.

The number of houses required to meet overcrowded and insanitary conditions is indicated at the end of § 1. *These requirements, together with the planned location of houses and neighbourhood facilities, condition the desirable pattern of future housing development outlined in* § 2 *and the final chapters.*

§1. THE PROBLEM OF OVERCROWDED AND INSANITARY HOUSES

(*a*) STANDARDS AND NEEDS

THE main purpose of the present Survey is to provide information upon which planning schemes can be built. One of the most pressing needs in any plan will be the provision for adequate housing of the population. The number of houses needed will be dependent upon two immediate factors—the number of houses overcrowded at present, and the number of insanitary houses and other houses which in normal conditions would be counted as unfit for habitation. These two aspects have therefore been surveyed in detail and the results of the survey are set out below.

In estimating the overcrowding position many standards have in the past been used. From these, four different standards have been selected for this Survey. The different sizes of houses have been calculated by considering only the number of habitable rooms, without reference to floor space. The four standards, listed in order of their leniency, are defined as follows:

Standard I. Standard of two persons per room, i.e. overcrowding occurs where there are more than two persons per room. This standard was generally adopted before the 1936 Act and was used by the Worcester Authority as the basis of calculations shown in Table I.

Standard II. Ministry of Health Housing Act, 1936. 'A house is overcrowded if the number of occupants is such that two persons of over ten years of age, of opposite sex, and not being man and wife, must sleep in the same room.'* A house was also considered overcrowded if the number of occupants exceeded the permitted number for the type of house. The permitted numbers, counting a child under ten as a half, and excluding children under three, were:

No. of rooms per house:	*One*	*Two*	*Three*	*Four*	*Five*
Permitted number of occupants ..	1	3	5	7½	10

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*Sch. 5, Subsec. 58/62/68.

plus two per room for each room in excess of five. There were certain other provisions, e.g. a room with an area of less than 50 sq. ft. shall not be counted as a room, and a room with an area of 70–90 sq. ft. shall only be occupied by one adult and 50–70 sq. ft. by one child.

Standard III. One person per room: i.e. overcrowding occurs where there is more than one person per room. Each infant or child under fourteen counted as half a person.

Standard IV. One person per room with no discrimination between adults and children. This was the standard officially adopted by the Ministry of Health for wartime billeting purposes in ascertaining surplus accommodation available in 'reception areas.'

With any given standard in mind, the future demand for houses will depend upon the size and structure of the population to be served and the existing housing accommodation. A discussion of the probable trend of the future population of the Worcester area as a result of natural increase is contained in Chap. III. Unless there is industrial expansion in Worcester the future population of the City is unlikely to rise very much above the pre-war total. In the 1931 Census the population of Worcester was 50,497; by early 1939 it was estimated by the Registrar-General to have grown to 53,800. After that the population swung up and down by efflux of Service men and women, and influx through evacuation and war industry. In September 1939 the population was up to 56,355; in June 1940 down to 54,680; in December 1940 up again to 60,660. After this there was a steady rise to 61,200 in December 1941, and 62,000 in December 1942. In September 1944 the population was down again to 60,500. If we allow for

(*a*) a natural increase at an annual rate rather less than the rate between 1931 and 1939;

(*b*) the loss to Worcester of some proportion of citizens in the Forces either as casualties or by continued service abroad;

(*c*) some retention of the wartime influx into Worcester (the gross influx, not offset by Service efflux, may have been about 11,000);*

then the estimate which may be hazarded, after making these allowances, is 57,000—as a minimum. This figure is composed of a basic 53,800 in 1939 plus (*a*) 2,400; minus (*b*) 1,200; plus (*c*) 2,000 as a minimum.

Apart from possible new industrial development or any considerable retention of wartime expansion in Worcester City, the housing problem will, then, be primarily that of providing adequately for a population of at least 57,000. The total population gives no accurate indication of the number of family units needing houses or flats of various sizes. If the announced policy of the Government in giving priority to new families setting up home is carried out, a local authority which makes adequate provision of the right type will be likely to retain its younger adults who might otherwise seek employment elsewhere. This point, that good housing will probably attract or at least retain young people, also merits consideration in view of the loss of population over recent years by emigration from the whole of the district earlier defined as 'the area of Worcester's influence.' Ideas of people as to the type of accommodation which they desire are likely to be different from their pre-war ideas. For example, about 11% of the people awaiting displacement under the scheme made for Slum Clearance under the 1936 Act were 'single units,' and many such people in the future would probably prefer a small house or flat to sharing a house with a family as hitherto.

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*Answers to the house-to-house inquiry made it clear that many newcomers to the City were prepared to stay if they were sure of securing employment.

(*b*) OFFICIAL ESTIMATES AND PROGRESS, 1931–41

The progress made in Worcester City since 1931 in the relief of overcrowding and insanitary and 'unfit' conditions is summarized in Table I. There are considerable difficulties in collecting comparable statistics for the intervening years (1931 to the present time), even on the fairly simple overcrowding standard (Standard I) of two persons per room. The estimates set out in Table I do, however, provide a rough indication of the housing situation and housing needs at each date of survey, 1931, 1936, 1937, 1941. House building 1918–45 is mapped on Fig. 24.

We may begin our calculations of present housing needs with the figure of 322 overcrowded houses on Standard I arrived at by the survey made in 1941, at the direction of the Ministry of Health, to ascertain the amount of surplus billeting accommodation in the City. This survey covered a population of 61,200 and included a wartime influx balance, since early 1939, of 7,400, over and above citizens serving in the Forces, thus making the overcrowding position appear worse than is likely to be the case in peacetime. No information is available as to the extent of overcrowding in each house, but it was found in 1931 (by an actual census) that to meet overcrowding of more than two per room in 339 houses, 150 new houses were required for the larger families and the smaller families could be rehoused in the houses made vacant. Thus, since the family structure of Worcester is not likely to have changed much in the intervening years, it can be assumed that, in December 1941, about 150 new houses would also relieve the overcrowding in the 322 houses then found overcrowded on Standard I.

TABLE I

WORCESTER CITY: Estimate from official sources of overcrowding and insanitary conditions 1931-44 and progress made in relieving them

Date	Estimated Population	Source of Estimate	Particulars of Overcrowding or Insanitary and Unfit Conditions	Progress	Estimated Needs No. of Houses
April 1931	50,497	Census	By standard of more than two persons per room: overcrowded families were 339		To meet overcrowding and making allowance for possible redistribution 150
1931–5				Houses built: Council 261 Private .. 1,151	
1935–6				Houses built 369	
July 1936	52,700	Medical Officer of Health Report	Houses overcrowded: Council houses (6·8%) .. .. 126 Private houses (1·5%) .. .. 129 Unfit houses scheduled for Slum Clearance 41 296		5- and 6-bedroomed houses to meet overcrowding .. .. .. 135 (Suggested by M.O.H. that part could be met by a redistribution in Council Houses and the building of thirty houses or flats for single units)
January 1937	53,050	Medical Officer of Health Report	No. of houses represented as unfit under 1936 Act (laying down uniform standards, more rigorous than adopted hitherto) .. .. .. 1,554 Houses overcrowded: Council houses .. .. .. 47 Private houses 49 96	1936–9 Made fit .. .. 132 Demolished or closed 846 Awaiting final action, Dec. 1939 .. 576	
November 1938	53,300			Council Houses built (including 36 Flats) 753	To rehouse Slum Clearance families .. .. .. 549 To replace houses represented for demolition 120 669
December 1941	61,200	Billeting Survey Ministry of Health	Families overcrowded: (*a*) By Standard I of more than *two* persons per room .. .. 322 (*b*) By Standard IV of more than *one* person per room 3,233	1940–3 Houses demolished .. 230	To meet overcrowding on Standard I (two persons per room) 150
Jan.–Aug. 1942				Min. of Supply—Houses built: Houses .. .. 100 Flats 100	
January 1944	60,000	Sanitary Inspector	No. of insanitary houses .. .. .. 238 No. of borderline houses 620 858		To replace houses condemned as unfit 858
					Estimate *as of December* 1941 to meet needs due to: Overcrowding (Standard I) 100* to 150 Unfit houses .. .. 858 958 to 1008

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* This allows for some duplication of unfit and overcrowded houses.

To the houses required to meet overcrowding on Standard I must be added the considerably larger number required to offset the demolition of insanitary and unfit houses. In 1944 there was an actual examination by the Sanitary Inspector which disclosed 858 houses to be insanitary or on the borderline, and we may assume that this number was fairly constant and approximately represents the insanitary and borderline houses in 1941. The total of houses required in December 1941 because of overcrowded, insanitary, and unfit conditions appears therefore to be 150 + 858 = 1,008. But some of the 150 overcrowded houses to be replaced would also be insanitary. To allow for this duplication, we may write 958–1,008 as the total of requirements in 1941. This is the most recent total which can be calculated from *official* statistics.

(*c*) ESTIMATES FROM THE HOUSE-TO-HOUSE INQUIRY, 1944

In 1942, 200 dwellings (100 houses and 100 flats) were built by the Ministry of Supply in the Avon and Teme roads. This relieved over-

TABLE II

RELATION OF ROOMS TO PERSONS PER HOUSE

Number of houses overcrowded according to Standard I shown in italic type; extra number, Standard IV* shown in bold type (1944 Inquiry)

Number of Persons in House	Number of Rooms in House							Totals (According to Family Size)		
	One	Two	Three	Four	Five	Six	Seven plus	House-holds	Overcrowded houses	
									Std. I	Std. IV*
1	1	6	7	8	3	4	0	29	*0*	**0**
2	**0**	10	10	54	42	20	10	146	*0*	**0**
3	*0*	**7**	24	89	56	27	7	210	*0*	**7**
4	*0*	**4**	**3**	87	88	35	12	229	*0*	**7**
5	*0*	*1*	**4**	**28**	66	17	10	126	*1*	**33**
6	*0*	*2*	**3**	**13**	**36**	20	10	84	*2*	**54**
7	*0*	*1*	*2*	**5**	**19**	**3**	6	36	*3*	**30**
8	*0*	*0*	*0*	**1**	**10**	**5**	1	17	*0*	**16**
9	*0*	*0*	*0*	*1*	**3**	**3**	1†	8	*1*	**7**
10	*0*	*0*	*1*	*0*	**0**	**1**	2‡	4	*1*	**3**
11	*0*	*0*	*0*	*0*	*1*	**1**	0	2	*1*	**2**
Total houses	1	31	54	286	324	136	59	891	—	—
Overcrowded houses (according to size of house) Std. I	*0*	*4*	*3*	*1*	*1*	*0*	*0*	—	*9*	—
Std. IV*	**0**	**15**	**13**	**48**	**69**	**13**	**1**	—	—	**159**

*In the *totals*, the bold type includes Standard I overcrowding. †Nine rooms.
‡One of eight rooms overcrowded, by Standard IV; one of twenty, not overcrowded.

crowding but has not entirely eliminated it, even on Standard I, as our own sample house-to-house inquiry in 1944 brings out. In this inquiry *complete* replies to our housing questions were obtained from 891 households,

TABLE III

RELATION OF ROOMS TO PERSONS PER HOUSE (CHILDREN COUNTING HALF)

Number of houses overcrowded according to Standard III shown in bold type
(1944 Inquiry)

NUMBER OF PERSONS IN HOUSE	NUMBER OF ROOMS IN HOUSE							TOTALS (ACCORDING TO 'NET' FAMILY SIZE)	
	One	Two	Three	Four	Five	Six	Seven plus	House-holds	Overcrowded houses
1	1	5	7	9	6	3	0	31	**0**
2	**0**	14	19	89	70	28	11	231	**0**
3	**0**	**8**	17	128	100	38	13	304	**8**
4	**0**	**2**	**3**	39	76	30	16	166	**5**
5	**0**	**1**	**5**	**15**	46	17	6	90	**21**
6	**0**	**1**	**2**	**4**	**19**	11	9	46	**26**
7	**0**	**0**	**1**	**2**	**7**	**4**	2	16	**14**
?+	**0**	**0**	**0**	**0**	**0**	**5**	**2**	7	**7**
Total houses	1	31	54	286	324	136	59	891	
Overcrowded houses (according to house size)	**0**	**12**	**11**	**21**	**26**	**9**	**2**	—	**81**

Note to Tables II and III. The figures are the results of a sample inquiry, and should be multiplied by 16 to make them applicable to the whole City. For definition of Standards see pp. 136–7.

approximately 1 in 16 of all those in the City.* The houses visited were evenly distributed throughout the area, and therefore the findings of the survey on such a large sample can be taken as representative of the whole City. The details collected included the size and composition of the family, and the number of rooms in each house. Results are summarized in Table II, which is arranged to show automatically, by means of two different styles of type, the number of houses overcrowded on the Ministry of Health's billeting standard (Standard IV) of one person per room, and also the number of houses overcrowded on the standard of two persons per room (Standard I). Table III brings out, by a similar arrangement and type, the houses overcrowded on Standard III, where one person only is allowed per room but a child under 10 counts as only a half.

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*See App. I.

From Tables II and III it is possible to set forth the number of houses overcrowded by the three standards applicable,* as follows:

Overcrowding standard	In sample	Estimated total for City (Sample × 16)
Standard I = more than two per room	9	144
Standard III = more than one per room (children under 14 = ½)	81	1,296
Standard IV = more than one per room	159	2,544

The question now arises as to actually how many new houses would be required to rehouse the overcrowded population. Assuming that all the overcrowded houses could be made vacant together, all the *smaller* families could be rehoused adequately in the larger houses. For the rest, new houses would be required.

The figures below give a summary of results from such a redistribution, on the highest standard most likely to be practicable, i.e. Standard III. The relevant distribution of families visited in the house-to-house inquiry is given according to house size in Table III, the family size being 'net' size, i.e. counting each child as half a person.

If the total of 81 overcrowded houses *in the sample* (indicated in Table III by **bold** type) were made vacant and the smaller families rehoused in the larger of these houses, the following result would be obtained by comparing totals in the bottom line and in the right-hand column of Table III:

No. of rooms per house ..	One	Two	Three	Four	Five	Six	Seven plus	Total (in sample)
Houses made vacant ..	—	12	11	21	26	9	2	81
Families rehoused ..	—	—	8	5	21	9	2	45
Families not rehoused ..	—	—	—	—	—	17	19	36
Total families overcrowded ..	—	—	8	5	21	26	21	81

---

*Standard II has too complicated a formula to be applied.

Only 9 and 2 of the 26 and 21 six and seven-plus unit families shown in this column can be rehoused, because there were only 9 and 2 six and seven-plus roomed houses vacated. A total of 36 displaced households is shown for which there are no sufficiently large houses vacant. All these families have six or more units (children counting half), needing at least six rooms. 26 out of these 36 households have six units, and only 9 can be accommodated in the six-roomed houses left vacant, leaving 17 families requiring six-roomed houses. By similar reasoning 12 families need seven-roomed houses, and 7 need eight-roomed houses. To obtain estimates for the whole City these sample numbers must be multiplied by 16, making a total of 576 (larger) houses required.

REQUIREMENTS

	Sample	Estimate for whole City (Sample × 16)
Six-roomed houses ..	17	272
Seven-roomed houses ..	12	192
Eight-roomed houses ..	7	112
Total ..	36	576

This is an ideal theoretical calculation of the possible redistribution of families, in order to match up the different sizes of families and houses. In practice, such redistribution is neither practicable nor altogether to be advocated. The size of individual families does not remain static, and it is inadvisable for families to keep changing their homes as the size of their family increases or decreases; in the latter cases families should retain a freedom of choice, enabling them to remain in a larger house than the size of their family necessitates.

Some of the units mentioned above as 'families' might in fact be two normal families which could be split up to occupy some of the smaller houses made empty, thus lowering the demand for the larger houses. But even so, the results show that past building has concentrated too much on the smaller houses with not enough provision for the larger families. Assuming only a negligible number of the displaced households can be divided into two families and thus accommodated in the smaller houses, a redistribution or rehousing would require a total of some 576 new houses, and would leave approximately 576 smaller houses vacant.

The extra needs of replacing insanitary and unfit houses must also be met. In January 1944 the numbers judged to be insanitary were 238, with an extra 620 in a borderline condition. But many of these are already

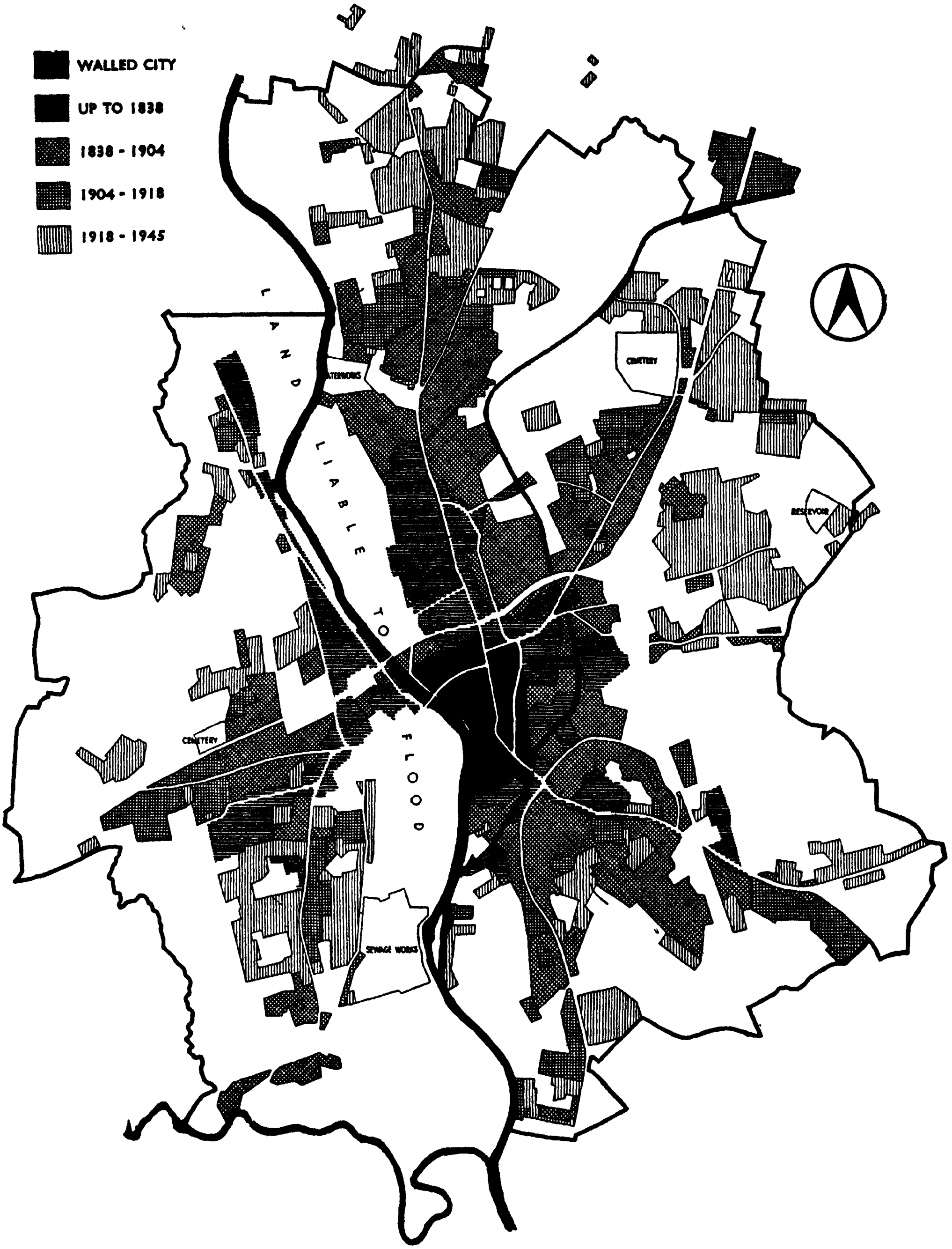

Fig. 24. GROWTH OF THE CITY OF WORCESTER

From the old walled City (marked black on the map) building first spread northwards (horizontal lines) along the drift deposits on both sides of the river floodland. Next came large developments (cross-hatching) farther northwards and north-eastwards, and then large developments (square hatching) westward and south-westward along main roads. The main interwar developments (vertical lines) are largely housing estates near the south-west, north, and north-east boundaries of the City.

included in the 1,296 houses estimated as overcrowded on Standard III in the City as a whole; and since some (probably the majority) of them are also small houses of two or three rooms, they would be left vacant by the suggested redistribution and therefore need not be added to the total estimated above (576 houses) required to relieve overcrowding. The net figure of houses which would have to be provided to replace insanitary houses (including borderline cases) not overcrowded is estimated at a figure of approximately 500.

(*d*) CO-ORDINATION OF ESTIMATES

Estimates from each source may now be compared. The first calculation, shown in Table I, was based on the Ministry of Health billeting survey of 1941. The result was arrived at by taking the total number of insanitary and unfit houses (858) (definitely found in 1944 and counted as having existed in 1941) and adding to this the additional number of houses required to relieve overcrowding on Standard I. The overcrowded figure found by the billeting survey was 322, but was estimated at between 150 and 100 after allowing for rehousing and for duplication with unfit houses. Thus the total of new houses required was calculated as about 1,000 (actually 958–1,008).

In our second calculation of new housing needs, figures were based on our own more recent sample house-to-house inquiry, and it was possible to adopt a different method and to calculate overcrowding by several standards. Between 1941, the date of the billeting survey, and 1944, the date of our own house-to-house survey, 200 additional dwellings had been provided by the Ministry of Supply and a fall in population of over 1,000 had taken place. Probably as a result, overcrowding on Standard I (of more than two persons per room) seems to have fallen considerably. All but nine houses in the whole of the sample survey were above Standard I. The overcrowded nine sample families represented (though somewhat uncertainly, owing to small numbers) 144 families in the whole City.

If, as already explained, we allow for overlapping or duplication of overcrowding and insanitary conditions and for the rehousing of smaller overcrowded families into larger houses vacated by the larger overcrowded families, possibly not more than fifty extra houses are needed today on account purely of overcrowding by Standard I. But that standard is admittedly very lenient, and Standard III is more likely to be adopted. On this standard our calculation showed that in 1944, 576 houses were required. To this number must be added the number of houses out of the 858 in an insanitary or borderline condition which would not automatically be dealt with in relieving the (1,296) houses estimated as overcrowded on Standard III. This number to be added was estimated as about 500. The total houses required in 1944 to replace insanitary houses and houses overcrowded on Standard III were thus estimated at 1,076. This estimate is consistent with that of 958–1,008 for 1941 based on official sources, since though 200 houses had been built between 1941 and 1944 and the population has fallen, the standard used for overcrowding was considerably more strict. This standard (III) of one person per room (children counting as half) is the practical standard that is likely to be adopted in the immediate future, and the 1944 estimate (on Standard III overcrowding) of 1,076 houses may be taken as a datum line for future requirements. After the 'upset' of war, population is likely to settle at slightly less than the 1944 level of 60,000, though probably not lower than 57,000. We may estimate approximately one thousand new houses as the requirement when the peace 'settlement' comes. If overcrowding is tested by a higher standard such as Standard IV (only one person per room, children counted as one) then, of course, requirements would have to be considerably revised upwards from 1,000 houses.

(*e*) ALLEVIATION BY SHORT- AND LONG-TERM PLANNING

In June 1942 the West Midland Group for Post-war Reconstruction and Planning carried out a survey* of the houses in Worcester and classified them into three main types. The results of this survey are shown in Fig. 26.

The houses of Type 1 are slum property which would be condemned as insanitary under the present Housing Acts; and therefore should be cleared away immediately. Type 2 are marginal slums, i.e. insanitary houses though in somewhat better condition than those in Type 1. These should be cleared away as soon as Type 1 have been dealt with. Type 3 include the 'Ladysmith Villa' (Fig. 78), badly sited and designed, with little or no regard to neighbourhood amenity, and should therefore be replaced within thirty years or so, when their normal span of life is ended. The larger and particularly well-built houses with an indefinite span of life, and houses built since 1918, are indicated here as Type 4.

857 houses were classified by the West Midland Group within Type 1. This number corresponds remarkably to the 858 estimated by the Sanitary Inspector in Worcester as unfit (see preceding section). These houses are around the central areas of the City, but not always (see Fig. 27) where the housing density is highest. Other houses of Type 1 lie on the western bank of the Severn, around Diglis Basin, and in small blocks scattered over the City.

Approximately 2,500 houses were classified within Type 2. These consist mainly of houses in the central parts of the City between the Canal

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*Undertaken by E. A. Avery.

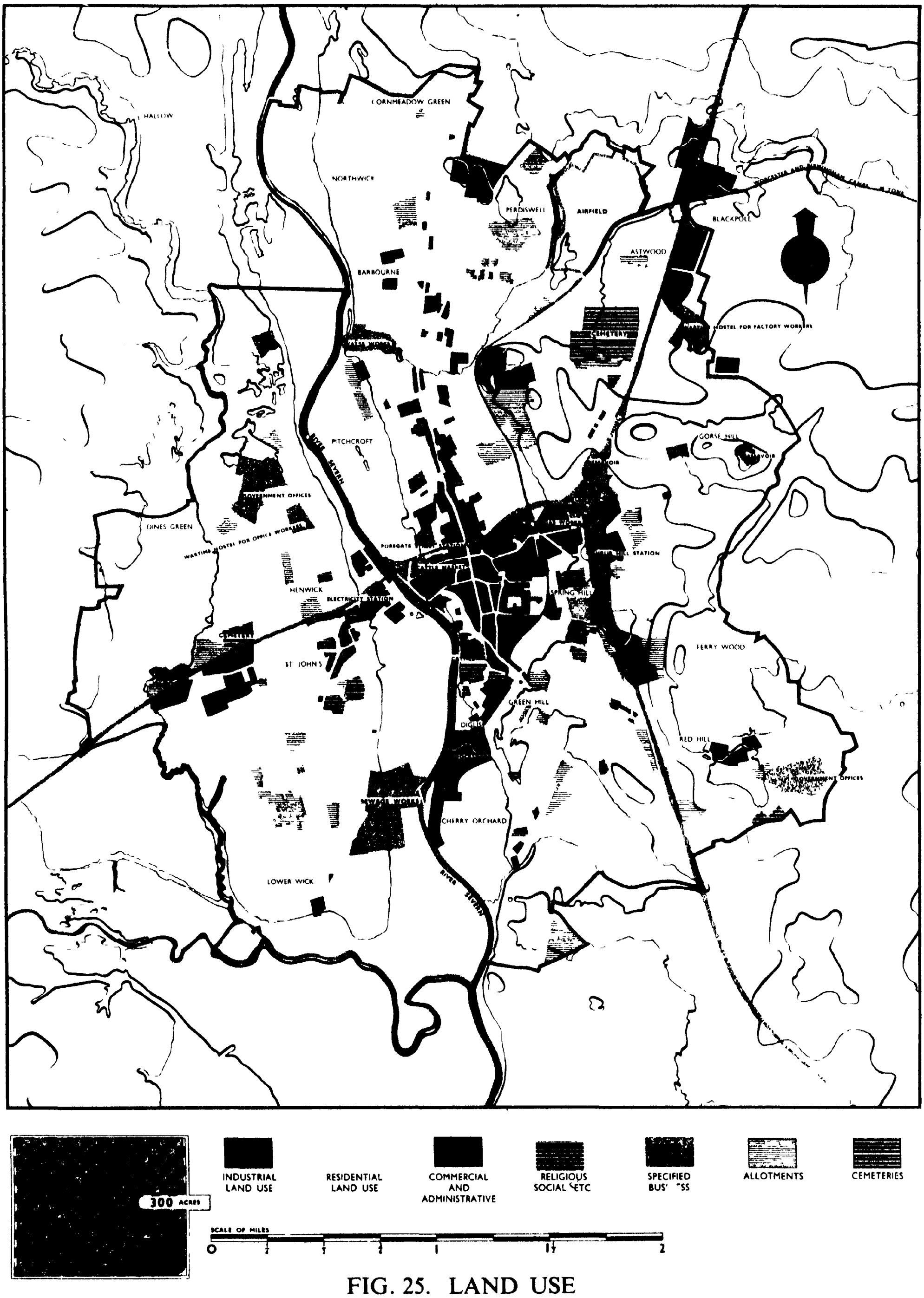

FIG. 25. LAND USE

The principle adopted here differs from Fig. 1. *Colours depend upon user; for instance, some of the land here marked black may be used for recreation by industrial concerns and is shown green in Fig.* 1. *Where dwellings occur above shops, they are here marked as commercial though elsewhere marked as housing.*

The contour lines vary in thickness to show whether they enclose a hill or a depression. The midday sun casts shadows downhill to the north, hence hills are given thicker lines to the north, depressions thicker lines to the south.

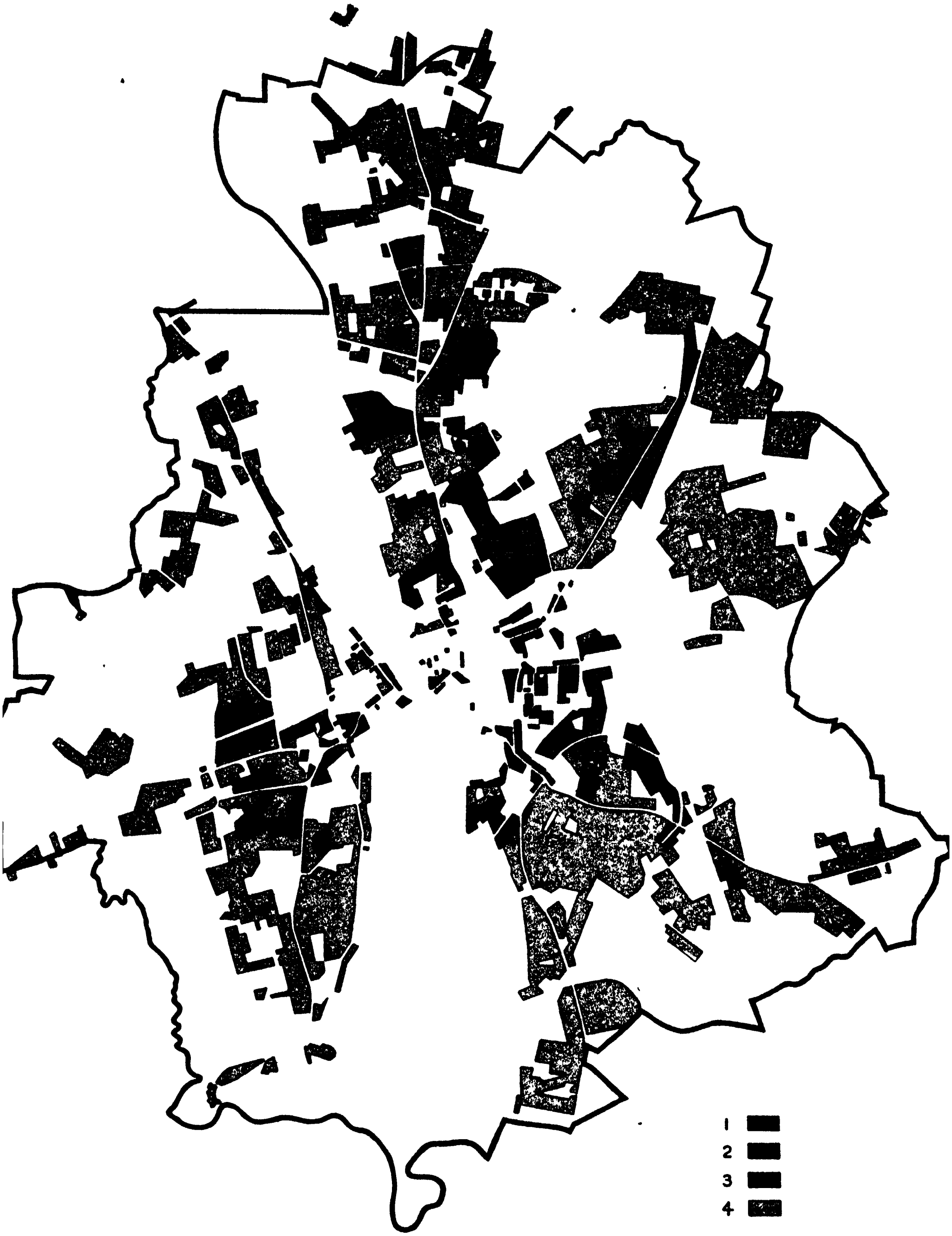

Fig. 26. CLASSIFICATION OF HOUSES FOR REPLACEMENT

According to the West Midland Group standards. The types are described on pages 146–51. *Type* 1 (*slums for immediate replacement*) *constitute about* 6% *of all houses in Worcester. Type* 2 (*marginally slums*), *about* 17%. *This compares with about* 18% *and* 16% *for the Birmingham and Black Country conurbation.*

and High Street, in the Diglis area, and in the older housing areas on either side of the Barbourne Road leading north out of the City. These houses also form more densely built-up areas than those coming within Type 3.

Under Type 3, the West Midland Group estimate some 5,200 houses. Apart from the houses classified in Type 4, this type forms the remainder of the housing in Worcester.

To sum up. On the assumption that the population of Worcester after the disturbance due to war is in the region of 57,000 (or slightly above), the immediate figure of housing needs will be approximately 858 to alleviate the existing insanitary conditions (a figure estimated quite independently by both City officials and the West Midland Group for Post-war Reconstruction and Planning), plus a number of houses to relieve the overcrowding not automatically dealt with by eliminating insanitary conditions. This additional number would vary between about 100 and 225, according to whether standard of overcrowding I or III is adopted, making total requirements of roughly 950–1,075 houses. The total would be considerably greater if Standard IV is adopted of one room per person (children as well as adults counted as one).

In making plans to relieve overcrowding, one important consideration is to ensure that a sufficient number of the larger-size houses are provided. Tables II and III show that past housing schemes have tended to concentrate too much on medium-size houses and to neglect the larger families. The statistical evidence of this is supported by the answers to the house-to-house investigation. In 55% of those houses where either the whole or part of the households appeared to want a chance of obtaining a new house after the war, the need was for a larger house. Apart from the necessity for additional bedroom accommodation, as many as 69% of these householders wishing to move specifically mentioned their preference for a house with two living-rooms. But the changing age-structure of the population discussed in Chap. III must also be considered. With an increasing proportion of persons in the older age-groups, a greater proportion of houses for 'single units' must be planned.

The figure of unfit houses estimated both by the City Sanitary Inspector and the West Midland Group is only a *minimum* figure. In each case it was based on a survey of *individual houses*. In practice, however, the replacement of these houses would also involve replacing houses lying alongside them or forming part of blocks in which houses of a low standard predominate. Thus the immediate requirement for new housing is likely to be considerably greater than the number (858) of individual insanitary or unfit houses. In fulfilling this programme a large number of houses falling within the West Midland Group Type 2 will automatically be dealt with (this figure is estimated at approximately 250), leaving further houses of the 2,500 in Type 2 (now in borderline condition) due for replacement by the time this first programme has been implemented. The replacement of the 5,200 houses classified as Type 3 by the West Midland Group and not considered worthy of preservation is not an urgent matter—these houses can gradually be dealt with at the end of their normal lifetime.

Should new factories or the fostering of Worcester's attractions as a holiday and recreational centre, as recommended in Chap. IV, lead to substantial increase in the population, such changes must be reckoned with in planning future programmes for housing.

§2. THE PROBLEM OF UNPLANNED DEVELOPMENT

Good housing is not just a matter of the number and type of individual houses. Housing development must be considered in relation to the layout of the City. The general growth of the City of Worcester from the time when it was confined within the city walls to the present date is shown in Fig. 24, which indicates the extent of development reached by the dates 1838, 1904, and 1918, and the housing undertaken since 1918. It can be seen that expansion has tended to follow the course of the radiating main roads within the limits imposed by the physical character of the area (described in Chap. II).

The location of the main sites on which house-building (both by the Council and private enterprise) has taken place since 1918 were on the outskirts. Over the same period central sites have been cleared either under the Housing Act (1929) or for street-widening. While many houses were built during 1918–39 in all suburban areas, the total City population rose by only 4,000 from about 49,700 to 53,800; but the distribution over different areas of the City changed considerably. The redistribution of population is illustrated by dividing the City into five major Areas and tracing the population changes within each Area by means of five graphs (see Fig. 29). The areas into which the City has been divided for this purpose (and used in other analyses throughout the Survey) are shown in the sketch map accompanying the graphs. More accurate delineation of the Areas is given in the sheet map (Fig. 100) and in the footnote, page 205.

The estimates of population changes within the five Areas 1918–39 are as follows:

Area 1: Central Area	Decrease of 36%
Area 2: St. John's	25% increase
Area 3: Barbourne and Claines	Slight increase
Area 4: Rainbow Hill and Tolladine ..	Increase of almost 100%
Area 5: Spring Hill, Cherry Orchard, and London Road	No change

The extent of existing housing development is given in the *Frontispiece* (Fig. 1), where housing areas and open spaces are shown in relation to the distribution of the City's population. A large portion of the land in the City has remained undeveloped—partly owing to the large areas of land liable to flood—and, plainly, the proportion of open spaces to built-up areas is high. But it is important to consider the provision and location of open spaces laid out specifically as parks and recreation grounds both for children and adults, or otherwise reserved for public use. These facilities should be so distributed over the City that there is provision within easy access for each area, and the needs of each district in this respect are given full consideration in Chap. XII.

The housing density within the City shown in Fig. 27 was calculated by taking housing areas of varying sizes sufficiently small to include in each area only a single type of housing development. The number of houses per acre was then calculated, according to the standard method, by including the acreage covered by the houses, gardens, etc., and half the width of the road. The survey covered practically every house in the City, with the exception of houses in the most central area, where they are interspersed with shops and business premises, churches, and other buildings. The housing estates built since the last war within the City have a density in the case of municipal housing varying chiefly between 9 and 14 per acre, and in the case of building by private enterprise falling between 5 and 12 per acre. The density of this recent building conforms roughly to the standard advised (and still generally adopted for open development where land is cheap) that 'in ordinary circumstances not more than 12 houses should be placed on an acre of land wherever this is possible without materially increasing the cost of the scheme' (Local Government Board Circular, 18 March, 1918). In Worcester approximately 60% of the total number of houses are in areas where the density, calculated by the method indicated, is not more than 12 houses per acre, and only 10% are as dense as 20 per acre. The density of the Ministry of Supply housing estate, built 1941–2, and comprising 100 houses and 100 flats, is approximately 8·7 dwellings per acre.

Recent experience has shown that density regulations provide no useful guide to planners unless they relate to the type of development, i.e. numbers of houses of different sizes and numbers of flats. It is thus considered more satisfactory to regulate the number of persons per acre rather than the number of dwellings per acre. It is generally recognized that the net residential density of population may reasonably vary according to the location of the houses in the town. The recommendations of the Dudley Report* for redevelopment in *central areas* of residential

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*Report to the Ministry of Health on the Design of Dwellings, 1944, p. 60.

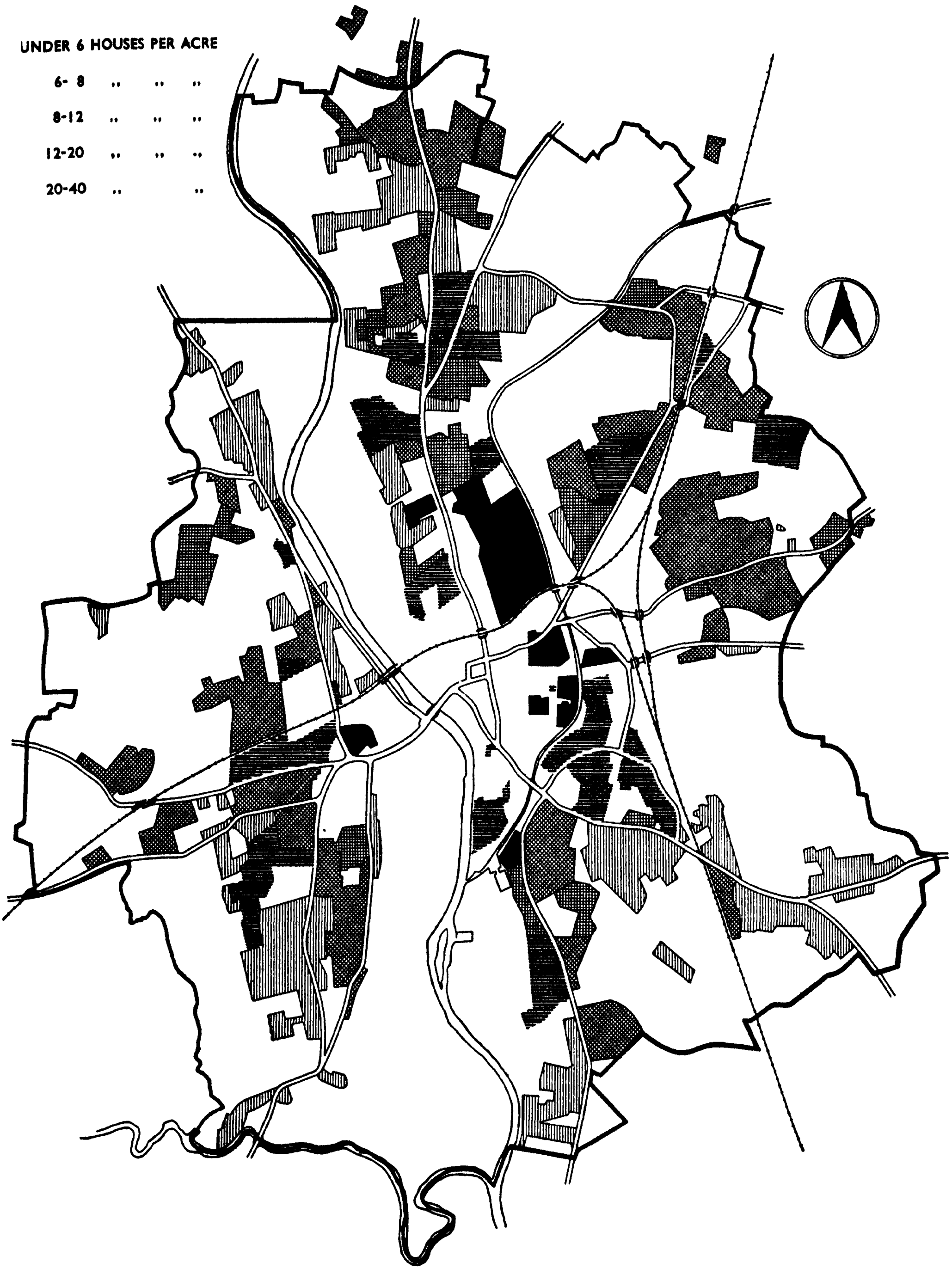

Fig. 27. HOUSING DENSITY IN WORCESTER

Where houses are interspersed with shops, as in the City Centre, density of houses per acre cannot be calculated. The highest calculable density does not necessarily correspond to the insanitary slum district (*Type* 1, *Fig.* 26) *and constitutes an additional reason for replanning. The main blocks of dense housing are of Type* 2 *or* 3 *east and north-east of the City Centre, much of them* (*see Fig.* 24) *built since* 1838.

neighbourhoods give the desirable net residential density as 100 persons per acre. This average net residential density allows for local variations between groups of dwellings as well as within those groups, e.g. the overall density of 100 persons per acre might range from 50 persons per acre in some housing groups to 200 persons per acre in some flat blocks.*

The average net residential density of the older housing areas in the *centre* of the City falls within this limit of 100 persons per acre. Maps and pictures (e.g. Figs. 25, 70) show unplanned development in the haphazard mingling of factories, shops, and other buildings among the blocks of houses. Many houses in these central areas are among the first which should be dealt with in a housing programme for the City, but their relatively low overall density shows that the rehousing of the population in these areas does not necessitate planning for extended development on the outskirts of the City. With efficient siting and layout this population could be rehoused in such a way as to satisfy modern standards of light, air, and accessibility to parks and playgrounds, on the acreage already occupied.

The accessibility of housing areas to places of work (factories, business premises, and centres of trade) is considered in Chap. V (Transport), while the location of housing in relation to educational establishments, health services, churches, social service, and centres of community activity are dealt with in their appropriate chapters. Information from official sources was supplemented by data obtained in the course of the sample house-to-house survey.† Householders were asked questions relating to distance, cost and method of travel, and the number of journeys to places of work, shopping centres, entertainment, and social centres. In cases where either all or some members of the household desired opportunity of obtaining a new house after the war, they were questioned on neighbourhood amenities and facilities which they thought most desirable, and the maximum distance from the City centre at which they would like to live. A summary of the answers to these questions may conveniently be given here.

The development of Worcester is not sufficiently widespread for considerations of time and money spent on travel from one part of the City to another to be of major importance. It is significant that complaints in connection with this made during our house-to-house survey were due almost entirely to restricted wartime bus services. It is therefore not surprising that, out of a total of 2,000 answers received to a questionnaire distributed throughout the City (with the electricity accounts),‡ as many

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*This variation in type of housing is illustrated in Fig. 81.
†See App. I.
‡See App. II.

as 95% expressed preference for a house (with garden) in the suburbs (provided that the bus service was good) rather than in the City centre.

While suburban housing is the popular demand, there is in most cases a maximum distance from the City centre beyond which people do not wish to live. During the house-to-house visits, members of households who stated that they would like a new house after the war gave in almost every case the distance from the City centre within which they would like to live. Of these, 97% wished to be within five, 92% within four and 83·5% within three miles. The *maximum* distances stated were distributed as follows:

1 mile	19·0%
2 miles	44·5%
3 miles	20·0%
4 miles	8·5%
5 miles	5·0%
	97·0%

The facilities most often mentioned as desirable were, in order of frequency:

1. Garden,
2. Bath,
3. Good bus route.

A smaller number wished to be within easy access of school, parks, and children's playgrounds—facilities which would mainly interest the parents of young children.

The desire for a house with garden is common throughout the country. Where cities have spread widely in unplanned development, low-density housing has prejudiced accessibility and cheap travelling. This is not the case in Worcester, where at present the longest journey by bus from the centre takes (see Fig. 20) only thirteen minutes. Thus, as will be shown in the final chapter, housing development in Worcester can be planned to ensure necessary community facilities, and also easy access to places of work and to the specialized facilities provided at the City centre.

§3. SUMMARY AND RECOMMENDATIONS

Estimates of the population required to be housed in Worcester after war 'disturbance' must take account of the natural increase with a trend towards stability described in Chap. III, of the return of Service men and women and of the departure of some, though probably not all, of the evacuees and of the workers attracted to Worcester's war industries. On this basis it was estimated that Worcester's post-war population would probably be 57,000 as a minimum, possibly rising to 60,000.

1. Various estimates were made, based on official sources and our own house-to-house inquiry, as to the number of houses required when the population settles down after the war. They supported the view that on a standard of overcrowding, condemning houses with more than one person per room (children counting half), slightly over a thousand (1,075) new houses might be required to meet overcrowding and to replace existing insanitary and unfit houses.
2. Though the size of families is becoming smaller, past housing schemes have concentrated too much on medium-size houses with not enough provision for the larger families. Plans should ensure that a sufficient number of the larger-size houses is provided.
3. The changing age-structure of the population discussed in Chap. III must also be considered. With an increasing proportion of persons in the older age-groups a greater proportion of houses for single units must be planned.*
4. When the first housing needs (under 1–3) have been met, there will be approximately another 2,500 houses at present in a borderline condition that will need replacement.
5. Should the population increase owing to new factories or to the fostering of holiday facilities, then the housing programme must be adjusted accordingly.

The plan of development (the layout) of houses is no less important than their number and type. Two further recommendations are:

6. Though there is plenty of open space in Worcester due to the land liable to flood, land laid out as public parks and recreation grounds for adults and children should be so distributed over the City that there is provision with easy access for each area.
7. The test of overdevelopment should be persons rather than houses per acre, and this ratio would vary with the location of the site. In the central area of Worcester the overall density of residents is not particularly high and, subject to Recommendation 6, their population could be almost entirely rehoused on the same or a similar acreage.

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*The different types of house required for different age-groups is illustrated in Figs. 82–4.

CHAPTER VIII

HEALTH, PUBLIC UTILITIES AND AMENITIES

A survey carried out as a basis for town planning must manifestly deal with industrial location and housing (the places where people work and live) and with the transport that links the two places. But, though less manifest, there are other services and facilities besides transport which are required of a modern town. There must be efficient centres for the distribution of goods, provision for high standards of education, and for the development of social life generally, requirements dealt with in Chapters IX, X, and XI. In addition, modern standards of living demand provision for the common needs of the general public, such as extension of public utilities and amenities. And, in the interests of health and welfare, services meeting the special needs of individuals or classes of individual must also be available.

To develop health and welfare services, utilities and amenities, is national policy. The local responsibility this chapter surveys is to detect existing shortcomings, to gauge the local need and demand for facilities of various types and adjust provision accordingly, and to select the sites where these facilities are to be available.

Requirements typical of the country as a whole and likely to increase in the future, for which cities must plan ahead, include the increased use of water and electricity (out of proportion to the increase of population) owing to rising standards of living and new industrial techniques; the wants of old people owing to the shift in the age-composition (described in Chapter III); and the wants of holidaymakers, partly owing to the extension of holidays with pay. This last development is of peculiar importance to Worcester as to all cities with fine scenery, architecture, and historical associations likely to attract visitors. Attention should be drawn to Figs. 58–64 in Chapter XII, giving places of interest in Worcester that should be preserved.

To plan for these requirements in health, utilities, and amenities, fitly for the capacity and possibilities of Worcester, entails a detailed analysis of the existing provision. The health and welfare services, now the subject of so much legislation, must be examined in particular detail, since Worcester presents fairly typically the local integration of existing procedures on which, in an evolutionary society, future policy will be based.

§ 1. HEALTH AND WELFARE

(*a*) HOSPITAL, NURSING AND CONSULTANT SERVICES

THE importance of Worcester as a hospital centre and a centre for specialized medical and health services in general has been indicated in Chap VI. Hospitals and nursing homes within the City have the following functions and number of beds:

Institution	Function	Total No. of beds*	Maternity beds
Worcester Royal Infirmary ..	General hospital	196	10
Worcester (Henwick House)	Women's and children's hospital	40	—
South Bank Nursing Home ..	General and maternity nursing	24	6
Nursing Home, Barbourne Road	General nursing	7	—
County and City Nursing Association	Maternity nursing ..	5	5
City and County Eye Hospital	Eye treatment	12	—
Municipal Homes Hospital ..	General treatment (P.A.C.)	119	3
City of Worcester Maternity Home (Avenbury)	Maternity nursing ..	12	12

*The figures represent the normal capacity of the hospitals: they do not include the extra number of beds which had to be crowded in to meet wartime emergencies.

Added to these hospitals, the area contains the City Isolation Hospital and Sanatorium for the treatment of tuberculosis and infectious disease

(119 beds) lying on the eastern boundary of the City, the Powick Mental Hospital 3½ miles south of the City (capacity for over 1,000 residents), a General Hospital at Malvern (22 beds), and smaller isolation hospitals at Knightwick, Upton-on-Severn, Pershore, and Bromyard. Hospitals at Droitwich provide specialized service for the Spa's visiting population. During the war a large hospital for Emergency Medical Service near the City Isolation Hospital was opened, but future plans for the building have not yet been determined. The total of beds for general hospital treatment amounts to 367 in Worcester City plus 22 in Malvern, constituting a ratio of about six beds to a thousand persons in the City and about three beds to a thousand persons in the total area of Worcester's influence.

If Worcester is to continue as the most important hospital centre within a wide area, the future improvement of its hospital facilities is essential.

The most pressing need in Worcester is for an extension in the accommodation for maternity cases. Apart from the need for actual maternity beds, special accommodation is required for the treatment of puerperal disease. The City Nursing Association (or Institute) gives assistance to maternity cases, but its primary function is district nursing. It acts as a Part II school for training in district work and midwifery. The three midwives attached to the Nursing Institute are paid by the City and form a part of the City's domiciliary midwifery and maternity services, which include ante-natal care, delivery, and nursing after birth.

Midwifery service carried out in Worcester in 1944 can be summarized in the following statement of cases dealt with:

By Midwives or Maternity Nurses:	Domiciliary cases		Cases in institutions		Totals	
	M*	MN†	M*	MN†	M*	MN†
(*a*) Employed by the Council ..	113	177	—	2	113	179
(*b*) Employed by voluntary associations						
(i) Under arrangements with the Local Supervising Authority (§ 1, Midwives Acts, 1936)	222	169	—	—	222	169
(ii) Others	—	—	184	424	184	424
(*c*) In private practice	62	56	—	—	62	56
TOTALS ..	397	402	184	426	581	828

*M = as Midwives. †MN = as Maternity Nurses.

Apart from the midwifery services, the domiciliary district nursing services rendered by the Nursing Association are carried out under direction of the medical practitioners. The number of medical practitioners within the City, taking panel patients, was in October 1943:

Principal doctors	19
Assistant doctors	5
Institutional doctor	1
	25

The consulting-rooms and surgeries of all the general practitioners are in the centre of the City (see Fig. 38, page 273), with the exception of two in St. John's and two in the Barbourne district. A wider distribution would be more convenient for people living on the outskirts of the City.

The total number of Health Insurance contributors in 1943 was 30,261, of whom 29,419 were on doctors' lists. The individual panel practices vary in size, up to a wartime maximum of approximately 3,000. In all cases the doctors have private practices in addition; and their duties are further increased by services rendered at clinics, factories, Dispensary, and hospitals.

For those people who are not National Health Insurance contributors, the Worcester Dispensary and Provident Medical Institution renders valuable service. Over the three years 1942–4 there was an average membership of more than 8,000 persons, and approximately 30,000 prescriptions were dispensed annually. This Institution has the services of six medical practitioners and a pharmacist, and also the benefit of advice from honorary consulting physicians and surgeons.

(*b*) CHANNELS FOR SPECIFIC HEALTH SERVICES

New developments have taken place in health services in addition to recent improvements in curative and other medical treatment. These developments have been due to a recognition of the importance of prevention rather than cure in raising and maintaining the general standard of health.

The following are some of the most important channels through which specific developments have been effected. Maternity and Child Welfare Clinics, with their Advice Centres and Health Visitors' services; Day Nurseries and Home Helps; School Medical Service, including facilities for meals and milk; opportunities for outdoor activities and recreation; and improved housing standards. With the exception of the last two (dealt with separately in § 3 of this chapter and in Chap. VII), these channels are considered here in greater detail.

(*c*) MATERNITY AND CHILD WELFARE CLINICS

The Worcester City Council has established four Maternity and Child Welfare Clinics in different parts of the City. No special premises, however, have been built, and those used at present are largely unsuitable for the purpose. The central clinic, established many years ago, functions in old two-storey premises in Lowesmoor. The site here is poor: the house stands on the main road to Shrub Hill station, and is set right up to the pavement with poor facilities for standing prams, and without ground for young children to play in while mothers attend the clinic. The internal accommodation of the building, too, is quite inadequate. It is cramped for space, even for carrying out its present services, and is clearly unsuitable since mothers with young babies and children, and expectant mothers, are obliged to go up flights of steps. The other three clinics are held in St. John's near the Christopher Whitehead School, at Brickfields, and at Claines (see Fig. 38). The two latter clinics have no premises of their own, but function one afternoon a week in halls hired temporarily for the purpose. In spite of difficult working conditions, it is to the credit of those responsible for their organization that the clinics have successfully performed a most valuable service.

The central clinic at Lowesmoor provides both ante-natal and post-natal services. During 1944, 326 women attended for ante-natal advice, with an average of 3 visits each, and 69 visits were made for post-natal attention. For all the clinics over the same year, the figures for children under 5 years were:

Total number of visits	16,488
Total number of children making the visits ..	1,436
First visits:	
Under 1 year of age	946
Over 1 year of age	80

These figures show that the average frequency of visits per child is once monthly. They also show that, as the number of live births in 1944 was 1,372, almost 70% of all infants under 1 year attended a clinic.

The main services provided by the clinics require a Doctor, Health Visitors, and Nurses. They include medical attention and advice, diphtheria immunization, and the distribution of cod-liver oil, milk, etc., to expectant mothers, nursing mothers, and children under 5. The attendance of the Health Visitors at the clinics is most important, because they are in a position to establish a friendly contact with mothers; they can persuade them to make use of the services provided at the clinics, and at the same time these services can often be more successfully rendered when the staff have knowledge of home circumstances. There are five

Health Visitors in the City, each responsible for serving a particular area. The five areas chosen as most convenient for this purpose are the same as those defined in this Survey as the five major areas of the City (see Fig. 100) and used in other chapters as a basis for analyses.

Statistics obtained from the sample house-to-house investigation* show that, of a total of 285 families with children under 5 years of age, 119 families (i.e. 42%) used the clinics—attendance only for the purpose of obtaining milk, orange-juice, etc., was not counted. The sample figures obtained are shown in the following summary. For total approximate estimates, applicable to the whole City, the figures should be multiplied by 16.*

Distance between home and nearest clinic	No. of Families in Sample with Children under 5 Years of Age			
	Attending a clinic	Not attending a clinic	Total number	% attending of total number
Up to ¼ mile ..	29	28	57	51%
¼ to ½ mile ..	35	56	91	39%
½ to 1 mile ..	20	47	67	30%
1 mile or more ..	35	35	70	50%
TOTAL SAMPLE ..	119	166	285	42%

These figures show that convenience is the chief factor determining the extent to which the clinics are used. Where a clinic is very handy, i.e. within ¼ mile from home, and very little time is spent on getting there and back, 51% of all eligible families (i.e. families with children under 5 years of age) use it compared with 39% and 30% of eligible families living from ¼ to ½ mile and ½ to 1 mile away respectively. Where, however, there is no clinic within a mile, mothers are encouraged to use the central clinic. As attendance there can conveniently be fitted in with shopping visits to the City centre, it is found that, for mothers living at a distance of at least one mile, attendance is as high as 50%. If the central clinic were established in attractive and up-to-date premises, it would probably draw many more people from all parts of the City, including a number who at present do not use a clinic (provided they are not required to attend the one nearest to them). But this does not detract from the importance of having widely distributed small local clinics which may be used by those people who do not find it possible to make regular visits to the city centre.

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*See App. I.

An analysis of the totals given on opposite page to compare the distances between clinics and the homes of eligible families in each of the five major areas of the City yields the following particulars:

	No. of Eligible Families whose Distance between Home and Nearest Clinic is:				
	less than ¼ mile	¼–½ mile	½–1 mile	1 mile or more	Total sample
Area 1. City centre	14	12	7	0	33
Area 2. St. John's	22	29	21	12	84
Area 3. Barbourne and Claines	3	12	12	30	57
Area 4. Rainbow Hill, Tolladine, and Brickfields	18	28	21	9	76
Area 5. Spring Hill, Cherry Orchard, and London Road	0	10	6	19	35
All Areas ..	57	91	67	70	285
	20%	32%	23½%	24½%	100%

This table shows that clinics are least accessible to families in the Barbourne and Claines and the Cherry Orchard and London Road areas. This fact is not so important in the latter area, as the total number of eligible families is considerably smaller than in the Barbourne and Claines area. The Claines clinic is situated in Area 3 (see Fig. 38), but it is too far north to be used by families living in the Barbourne districts nearer the centre of the City. In the St. John's Area the clinic is located in a central position, but as the population is higher and more diffuse than in any of the other four Areas, inevitably many mothers have to travel a considerable distance to reach it.

(*d*) FACILITIES FOR CARE OF INFANTS

The opening of three Day Nurseries by the City Council was a great help to mothers during the war. They were established at St. John's, Brickfields, and Rainbow Hill. Each accommodated 40 children, ages ranging from 4 months to 5 years, and were full to capacity, with long waiting lists in 1944–5. The majority of the children attended regularly over a lengthy period, and opportunity was thus given for effecting marked improvements in their health and cleanliness. There was surprisingly little spread of infectious diseases.

With the end of the war the demand for daytime care of young children is likely to decrease, and the larger part of the demand will be met by improved nursery school facilities provided by the Education Department. There may be some small demand, however, for establishments to look after the younger children under nursery-school age. From comments and suggestions made in the course of the house-to-house inquiry it appears that the most important demand will be for play-centres or other such places at which children will not, as now, be expected to be regular attenders, but places at which mothers can leave small children for varying periods of the day while doing their work or shopping. The wartime Day Nurseries were not sufficient in number to fulfil this purpose, as easy access must be the essential feature. Establishments of the type advocated must clearly be located (like clinics) at the central point of each neighbourhood.

The problem of mothers being tied to their homes all day on account of their infants and young children was raised in another connection. During the house-to-house inquiry many wives complained that they were unable to enjoy social activities outside their homes or have an occasional evening out with their husbands. They would welcome a scheme whereby women could be obtained for a few hours to mind children in their own homes. Two systems of home help were operating in 1944–5 under the Health Department and were used extensively, but these are specifically to assist women during confinements. Under the more popular of the two schemes the woman herself finds the person to look after her house and children and then makes application to the Health Department for a grant towards expenses. The grant given was 5s. a week for two weeks.

(*e*) SCHOOL MEDICAL SERVICES

The School Medical service supervises the health of children attending schools under the jurisdiction of the City Council. There are routine inspections annually, each child being examined on entrance, at the intermediate stage (age 8), and the year before leaving. Any defects found are referred either to the school clinic or to specialists at the Royal Infirmary, though parents may, if they prefer, send their children to private doctors. Medical treatment is followed up by one of the nursing staff. Seven nurses are available for this service, of which five are Health Visitors.

The School Clinic, in the centre of the City, is open every morning for minor ailments, dressings, etc., with a doctor attending twice weekly. Special facilities are provided at the clinic for dental attention and for treatment of uncleanliness, etc. For eye treatment a clinic is held once weekly at the Eye Hospital. Tuberculosis cases are referred to the Medical Officer of Health for treatment at the Dispensary. Treatment of minor ailments is also available at the School Clinic for children under 5 years of age who are sent there from the Child Welfare Clinics.

At the Girls' Secondary School, the Worcester Royal Grammar School and the Junior Technical and Commercial schools, all entrants are medically examined, and every other year there is an inspection of the entire school. These children can be treated at the Royal Infirmary or at the School Clinic but in the majority of cases are attended by private practitioners.

The City Open Air School provides accommodation for about a hundred children suffering from anaemia, debility, bronchitis, malnutrition, or other complaints making them delicate and often mentally retarded at the same time. The regular routine at this school includes provision of nourishing meals and rest periods. Particular care is given to cleanliness; and artificial sunlight treatment forms part of the special medical attention. Buses are provided to transport all children between home and the school.

Statistics for the war years of every aspect of the School Medical Services are contained in the comprehensive Annual Reports of the Medical Officer of Health. The 1939 Report includes a summary of the results of a school hygiene survey; an analysis of the returns of school medical inspections and treatment; the incidence of infectious diseases; the numbers of physically and mentally defective children. It also embodies the results of a special nutrition survey at Gorse Hill School, classifying children into the four groups (A, B, C, and D) laid down by the Board of Education. Several of the findings are of great significance.

1. At Gorse Hill the percentage ill-nourished was double that of the City as a whole. The children here were from slum-cleared families, and their standard of housing had previously been poor.
2. Evidence of physical defects was found most frequently in children in nutrition group D.

3. The highest percentage of slow or backward children were in the lowest nutrition groups, C and D.
4. Malnutrition was more prevalent in the larger families, where income per head was usually lower. This bears out the findings of the Survey made at Kingstanding, a Birmingham housing estate, in 1938–9,* where samples of fifty families of each size were surveyed. A relentless trend appeared. The larger the family, the higher was the proportion in each sample of fifty families found below the poverty line.

It has been evident that the provision of school meals and even of school milk alone has in Worcester reduced the degree of malnutrition.

Meals were provided at eighteen of the nineteen elementary schools in Worcester in June 1944. They were distributed from central kitchens, except to the two senior schools equipped with their own canteens. Meals were served either in the school hall or in the nearest parish hall. On a daily average, about 20% (1,347) of the children stayed for school meals—which is a high figure, considering that many children live a short distance from the school. It may be anticipated, however, that the demand for school meals will drop slightly when food rationing is ended and women are no longer in full-time employment. Figures for the same period (June 1944) showed that almost three-quarters of the children (4,927) were receiving school milk.

Many householders visited during the course of the sample house-to-house inquiry approved the provision of school meals and hoped facilities would be maintained after the war; there were no complaints or criticisms of the existing scheme.

(*f*) THE NEED FOR A HEALTH CENTRE

The outstanding need in Worcester is the establishment of a Health Centre. A central site with convenient access should be set aside for this purpose.

In the Government White Paper a Health Centre is advocated as the means of promoting grouped practice of general practitioners, by providing specially designed and equipped premises where a group can collaborate and share up-to-date resources. 'The design should provide for individual consulting-rooms, for reception and waiting-rooms, for simple laboratory work, for nursing and secretarial staff, telephone services and other accessories, as well as—in varying degree according to circumstances—recovery and rest rooms, dark rooms, facilities for minor surgery, and other ancillaries. The object will be to provide the doctors with first-class

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*Soutar, Wilkins, and Florence: *Nutrition and Size of Family.*

premises and equipment and assistance and so give them the best facilities for meeting their patients' needs.'* This does not imply that doctors would relinquish their consulting-rooms at home or be unable to visit their own patients as at present; but by arrangements for continuous staffing at the Centre a patient will, in an emergency, be able to get immediate attention even though his own doctor does not happen to be available.

In some boroughs, central clinics have been established to facilitate, in specially designed premises, a co-ordination of the services of health visitors, maternity and child welfare, and other clinics, and these are also called Health Centres. An eventual transfer of the work of these Municipal Clinics to the new Health Centres is envisaged by the White Paper. This would enable doctors, dentists, nurses, midwives, health visitors, and social workers to provide co-ordinated services, functioning from a central and suitable building.

The Government's policy on the White Paper proposals is now (1946) under discussion. Whether or not a policy is adopted which encourages the establishment of the comprehensive Health Centres outlined above, there is no doubt of the value of specially designed central premises in which may be co-ordinated health services already under the administration of Local Authorities.

In Worcester both the Maternity and Child Welfare Clinic (in Lowesmoor) and the School Clinic (in Friar Street) are at present housed in unsuitable and badly situated premises. Much benefit would be derived from suitably designed premises to house both these services, such as the premises of the Bilston Centre Health Clinic. Here facilities are provided for Maternity and Child Welfare Services; Dental, Ophthalmic, Ultra-violet ray, and Orthopaedic treatment; treatment of minor ailments; and for food store, sales, etc. Doctors and Health Visitors are also given special rooms; and residence is provided for a caretaker. The various departments surround the Central Waiting Hall, so that waiting patients have immediate access to the surgeries. The Waiting Hall overlooks and communicates with a playground, which children may use in warm weather; and a pram shelter, accessible from a private road, has covered communication with the building.

Apart from the convenience and facilities for co-ordination afforded to medical and nursing staff, the establishment of attractive and suitably designed and sited premises would show that the City is alive to the value of the services at these Clinics and would encourage the general public to make fuller use of them.

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*'A National Health Service,' (Cmd. 6502) p. 30.

A central site in Worcester, conveniently located in relation to other offices of the Local Authority, has already been earmarked by the City Council. Such a site would be most fitting for the establishment of a modern building of this type.

While co-ordinating Maternity and Child Welfare and School Clinics centrally, the importance should not be overlooked of local centres for mere routine services. Local centres, affecting economy in time and travel, can supply most requirements of mothers in the way of food and advice, except where specialized service is needed. In the same way, some system could be established in the various schools whereby children would not be required to travel to the centre of the City for the treatment of very minor ailments. A satisfactory system could be developed by the introduction of a school 'steward' (if possible, one to each school) with a degree in social science and with sufficient training in first-aid and nursing to enable her to deal with minor complaints. She would be able, by visiting homes, to make friendly contact with parents and acquire helpful knowledge of home circumstances, and would also act as liaison officer between school and clinic. In addition to these duties, the 'steward' could relieve teachers of many of the extraneous duties (connected with clothing, feeding, milk registration, salvage, compiling of lists) tending to devolve upon them, and leave them free to concentrate on teaching—the function for which they have been specially trained.* In the main, her work would be the responsibility of the Health Department. The 'steward' could in particular advise the central Clinic of children at her school requiring special treatment by the doctor, and it should be possible for a school bus to take children to and from the Clinic, so avoiding dangerous journeys across the City.

(*g*) SOCIAL WELFARE

Under the title of Social Welfare certain services may be surveyed other than medical treatment, offered to particular classes of the community to improve their health, standard of life, or 'morale.' This part of the chapter deals with certain problems which, in the interest of the general welfare of the community, are acknowledged to require special planning. Though the solutions to these problems do not necessarily lie in medical treatment, they are closely linked to the health services already considered, and in meeting psychological and social needs are now included in the conception of mental health and social medicine.

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*The Glasgow local association of the Educational Institute of Scotland found that in an elementary school of twenty teachers, the total time spent on extraneous duties was equivalent to a little less than that of the whole time of three teachers. (See '*The Times*' Educational Supplement,' 24th Feb., 1945.)

Old People's Welfare

With a rising proportion of old people within the population of Great Britain,* the importance of making special provision to meet their needs is becoming increasingly appreciated. Moreover, the shortcomings of the existing schemes for security in old age have been brought into prominence since the publication of the Beveridge Report.

There are at present in Worcester over 6,000 old-age pensioners. In 1944 the Post Office returns showed a weekly average of 5,744 contributory pensioners (this number includes women over 60 and men over 65, subject to the necessary National Health Insurance qualifications). In addition to this number there were, in 1944, 525 persons receiving non-contributory Old Age Pensions (including approximately 250 drawing supplementary pensions) available to persons over the age of 70 who have low incomes. Among blind persons there would also be a further small number of old people drawing pensions.

These numbers do not include the total number of old people living in Worcester, as they do not cover people between the ages of 60 and 70 who are ineligible for a Contributory Pension, nor do they cover those people over the age of 70 who, by reason of sufficient independent means, do not qualify for an Old Age Pension. But in themselves these numbers are sufficiently large to justify provision of housing accommodation specially designed for old people. The Worcester Corporation has made a beginning in this direction by the erection of two blocks of flats, one block containing 20 and the other 16 flats for the accommodation of either single old people or for old married couples. Apart from these flats, there is no special provision for old people except in the almshouses. Qualification to apply for the almshouses always necessitates past residence in Worcester, and normally there are also other stipulations, e.g. references are required, applicants must not have received Public Assistance for the past two years.

There are several Charities in Worcester, providing a total of approximately 150 almshouses, of either single or double rooms. The majority of almshouses are filled by single women, and most of the remainder by married couples. Some of the property owned by these Charities is very old and occupies sites which are likely to be required by the City for redevelopment purposes.

Institutional Care for Poor Persons and Children

The Public Assistance Institution, Shrub Hill, under the management of the City's Public Assistance Committee, was commandeered at the beginning of the war and all occupants were sent to Evesham; it has now been reopened. The Institution comprises both House and Infirmary. The House has beds for 325 poor people (including 70 in the Casual Wards), and 124 beds are provided in the Infirmary. In 1945 there were about 150 people to come back from Evesham, including about 80 Infirmary cases. Worcester Institution was before the war certified to receive up to 30 male and 30 female mental defectives. It is possible that this may again be the case but at the moment the Committee is not considering it.

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*See Ch. III.

The Cottage Homes, also under the management of the Public Assistance Committee, take children over the age of 3. Children before their third birthday are placed in the Nursery at the Institution; but during wartime the Nursery was transferred to the Cottage Homes. Medical supervision is carried out by the medical staff of the City Health Department. The Homes have room for 74 children, and cater mainly for children falling within the following categories:

Orphans, or children of unmarried women, who have been adopted by the City Council until the age of 18.

Children of mental defectives.

Children whose parents have been moved from Council Houses until new accommodation is found.

Children of mothers who are ill and not able to look after them at home. These children are only taken temporarily, and mothers are expected to contribute where they can.

Abandoned children of serving soldiers.

Illegitimate children whose mothers cannot be traced.

Children whose fathers are paying maintenance for them and whose mothers are not traceable.

Children whose mothers are being confined, and have no suitable people to look after them.

Further provision is made for orphans at the Royal Albert Orphanage and St. Alban's Home. The Royal Albert Orphanage takes children whose parents have resided either in the City, or the County of Worcestershire. The number of children at present in the Orphanage is low, but the building is planned to accommodate as many as 50 boys and 50 girls. The St. Alban's Home and Orphanage, run by the Sisters of St. Margaret, is mainly for girls, but also takes in small boys. Both of these places cater for children who have not got normal family circumstances, though neither cater normally for illegitimate children.

Moral Welfare and Treatment of Delinquency and Abnormality

There are many people, neither old nor destitute, who are outside the more straightforward welfare provisions hitherto described. Specialized case work or specialized institutional or individual treatment is required to readjust them to the conventions, rules, and standards of our society. Moral welfare work, probation work, and the treatment of delinquent and backward children are the chief specialized services.

The Worcester Diocesan Association for Moral Welfare deals with individual cases of children of unsatisfactory homes or unsatisfactory tendencies and helps them in finding suitable training, improving their environment, or meeting their need in some other way appropriate to the individual circumstances. Help to young girls and to unmarried mothers forms a large part of the work. Field House, Worcester, is a Shelter, a Training Home, a recognized Remand Home for the City, and Probation Hostel under the Home Office. One or two girls needing temporary shelter can be taken, the remainder of the girls come for training for varying periods up to two years. Girls who enter Field House as moral welfare cases (as opposed to probation cases) go voluntarily, usually at the wish of their parents. Some girls are sent on here from the Shelter at Malvern, which is also a recognized Remand Home. The Malvern Shelter can take girls for a few days or weeks, according to the need and circumstances, while inquiries are being undertaken or arrangements made to send them to Homes or return them to their own homes, or find them work. Malvern also has a two-year Training Home for young girls, who are given training chiefly in laundry and domestic work with classes in other subjects also.

One of the needs of the Worcester area appears to be for a 'Holiday Home.' It quite often happens that girls who have been through the hands of the welfare workers, either as probation cases or moral welfare cases, have no real home to go back to, and they often live at hostels or find 'digs' while they go out to work. This means that they have no suitable place in which to spend their holidays. Though not really intended for this purpose, the Shelter at Malvern is always booked up throughout the summer with such girls requiring a holiday. The need for a Holiday Home also applies to girls who have been brought up at the Cottage Homes and have been in the care of the Local Authority until the age of 18 (i.e. they have been Public Assistance cases, adopted temporarily by the Local Authority). Sometimes such girls go straight back to their homes (which are often a bad environment), but in other cases they require a place which will be as a home to them and where they can have a holiday with their friends. Yet it is not practicable to mix such girls either with the younger children at the Cottage Homes or with older girls staying at Field House or the Malvern Shelter on probation.

Though pregnant girls or unmarried mothers with young babies from the Worcester district are usually accommodated at Greenhill Hostel, Kidderminster, the Shelter at Malvern will take them for a few days in cases where they are turned out of their homes. At Greenhill Hostel, most cases are taken in for four months—for the two months before the birth of the baby and the two months following. Payment is required where the mother can afford it. Before the war, Greenhill had nursery accommodation for children who were allowed to stay there after the age of 2 months while mothers went out to work, but during the war this practice was discontinued. Adoptions are not organized from Greenhill, but each case is dealt with individually after mothers have left the Home. Very many adoptions have been carried out in Worcester recently by the official Adoption Agency under the City Secretary for Education, and in almost every case they appear to have been satisfactory.

Where unmarried mothers are able to remain living at home and no complications are expected during confinement, the Moral Welfare Worker informs the Health Visitor at the Lowesmoor Clinic, and these cases are either dealt with by a City midwife or, where it is thought more advisable, they are sent to the Public Assistance Maternity Home.

Rates of juvenile delinquency have not been very high in Worcester. Most cases brought before the Juvenile Court are put on probation. The usual offence is petty larcency. The greatest delinquency in Worcester is in Tolladine and Brickfields—districts which have most recently catered for the slum-clearance and overcrowded families.

Delinquency is related to mental abnormality and child delinquents benefit from the type of instruction and treatment in Special Schools. At Worcester there is no provision for these children, apart from special classes in some of the Elementary Schools. A considerable number of children who are both delicate and backward attend the Rose Hill Open Air School. A Special School has the advantage of being able to provide teachers who have been specially trained to deal with abnormal or difficult children.

Delinquents on the Approved Schools list are distributed over the country to the various schools organized by the Home Office, and the arrangements for the distribution are apparently satisfactory. However, those children who have once been certified as mentally deficient under either the Education or Mental Deficiency Acts are no longer eligible for an Approved School.

This section has concerned itself hitherto with the more important present-day social problems affecting physical and mental health and the welfare of various classes of the community. Responsibility lies with the Local Authority to assist in the solution of these problems by providing a high standard in housing conditions, in education for adults and children, and in facilities for organized (and educational) leisure-time activities; and by encouraging the development of neighbourhood life and a sense of each individual's responsibility towards the community. The way in which town planning can help in these preventive measures is indicated in § 3 of this chapter and in Chaps. VII, X, and XI. Health provisions must, finally, include plans for the disposal of the dead.

(*h*) DISPOSAL OF THE DEAD

Worcester has two municipal cemeteries. The larger, situated at Astwood, is 35 acres in extent (see Fig. 98); the smaller, in St. John's, is 10 acres. These cemeteries are marked in Fig. 25.

During the past three years there has been an average of 626 burials at Astwood and 131 at St. John's. It is estimated by the Superintendent that at this rate there will be space at the former for the next twenty-five years and at the latter for fifteen years. Moreover the Corporation owns adjoining land which may be used for extensions to both cemeteries: this amounts to 16 acres at Astwood and 17 acres at St. John's. Altogether burial space is available for a hundred years to come.

Where crematoria have been built, there has in recent decades been a marked increase in the number of disposals by cremation. Not only is the idea of cremation meeting with increasing favour but also the practice has much to commend it on general social and hygienic grounds. It is on the whole less expensive,* since there is no land to buy and there are very few running costs (such as grave-digging) once the capital outlay has been incurred. Owing to the risk of permanently concealing cause of death, however, cremation requires a special certificate from a Medical Referee and the complication of obtaining this is in some cases likely to be a deterrent factor.

During the ten years from 1926 to 1935, cremations increased in Great Britain from 2,877 to 9,614 per year. Among Worcester residents there have been in recent years about fifty cremations annually, but the nearest crematoria are at Birmingham and Cheltenham, each 26 miles away. With a crematorium available locally, the demand for cremation would certainly increase.

§ 2. PUBLIC UTILITIES

PUBLIC Utilities are commonly taken to include the provision of gas and electricity for light, heating, or power, and the provision of water; and may include refuse collection, street cleansing, salvage, sewage, and

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*Wilson and Levy: *Burial Reform and Funeral Costs*, pp. 180–9.

drainage (though these services are often classed with road and bridge-building as Public Works). In this section, attention is drawn chiefly to public utilities as commonly understood.

The common element in all these activities implicit in the words 'public utility' is that they are services offered to the public generally, useful to physical health or prosperity. Public utilities thus form a link between the health services and the amenities also covered in this chapter. The health services cater for physical health, but directly—by treating or advising particular cases or groups (e.g. the aged or the sick) rather than offering facilities to the public at large. On the other hand, amenities provide, like public utilities, for the public at large; but for their enjoyment, recreation, and culture rather than for utility. The public utility element is also shared by transport and communication. Transport has a separate chapter, but communications (i.e. postal services and telephones) are included in this section. The following chart shows the relation between the facilities and services surveyed in the sections of this chapter and the transport and education services in Chaps. V and X.

SCHEME OF SURVEY OF CITY SERVICES

	OBJECTIVES	
	Physical health and prosperity	Recreation and culture
Services offered to general public	Transport (Chap. V), Public Utilities and Works: Posts and Telephones (Chap. VIII, § 2)	Amenities (Chap. VIII, § 3)
Service (advice, treatment, etc.) to individual cases and groups	Health Services (Chap. VIII, § 1)	Education (Chap. X)

Public utilities are also linked to the general development of the City. Clearly old industries cannot expand or new industries be introduced, nor yet can housing be extended, unless the capacity exists for improving communications and increasing the provision of power, heating, lighting, water, and disposal of sewage.

All over the country public utilities are characterized by a wide variety in methods of organization and control. The fundamental factor is whether prices can or should be charged to the consumer sufficient to cover cost. If this is not possible, or not thought desirable, private enterprise working for a profit will not enter the lists. If prices to cover cost are possible and thought desirable, operation may be either by public authority or by private enterprise. Now for public utilities, in the strict sense of gas, water, electricity, and communications, prices can and, it is thought, should be charged to consumers. It is therefore possible for private enterprise to operate. In Worcester, gas is provided by the Worcester New Gas Light Company (a private enterprise), while electricity and water are provided by the City.* Postal services and telephones are, of course, a national enterprise.

This is not a technician's report, and consequently the public utilities of the city will not be surveyed from the general standpoint of scientific and engineering facts and possibilities, except where complaints have been received in the course of the house-to-house or the industrial inquiry. But this survey is economic and social, and where prices are charged, attention must be paid to the comparative level of such prices to the consumer. In a relatively small area such as that of most cities, the problem of access to public utilities (so urgent in country areas) is not difficult of solution. And for the same reason (the relative density of population within the area) the costs of public utilities are usually lower than in rural areas. The average distance per *consumer* of transport, the length of cables, pipes, and the transmission losses generally are less in a city like Worcester than in the country. This is an advantage not only to the domestic consumer in the City but to the City's industries. If industries are to be dispersed from congested areas such as London and Birmingham, this economy in transit and transmission is a sound reason for location in country towns such as Worcester rather than in villages or the open countryside.

Telephone charges are perhaps the best-known instance of the differential effect of the density of population. Within the City a business can communicate with several hundreds of other subscribers at a local rate of about a penny above the fixed rental. In the country, toll and trunk charges at higher charges and with time-limits would be necessary to communicate with the bulk of a similar number of subscribers. Though less familiar, the same principle of the economy of a concentrated population holds for electricity and gas supply, and can be shown by comprehensive statistics. County Boroughs have, on the whole, a more concentrated population than Municipal Boroughs, and Municipal Boroughs than Urban Districts. Tabulating data for English and Welsh County

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*For a study of practice among British Local Authorities and principles involved see Florence: *Statistical Method in Economic and Political Science*, pp. 371–5 and pp. 458–63.

drainage (though these services are often classed with road and bridge-building as Public Works). In this section, attention is drawn chiefly to public utilities as commonly understood.

The common element in all these activities implicit in the words 'public utility' is that they are services offered to the public generally, useful to physical health or prosperity. Public utilities thus form a link between the health services and the amenities also covered in this chapter. The health services cater for physical health, but directly—by treating or advising particular cases or groups (e.g. the aged or the sick) rather than offering facilities to the public at large. On the other hand, amenities provide, like public utilities, for the public at large; but for their enjoyment, recreation, and culture rather than for utility. The public utility element is also shared by transport and communication. Transport has a separate chapter, but communications (i.e. postal services and telephones) are included in this section. The following chart shows the relation between the facilities and services surveyed in the sections of this chapter and the transport and education services in Chaps. V and X.

SCHEME OF SURVEY OF CITY SERVICES

	OBJECTIVES	
	Physical health and prosperity	Recreation and culture
Services offered to general public	Transport (Chap. V), Public Utilities and Works: Posts and Telephones (Chap. VIII, § 2)	Amenities (Chap. VIII, § 3)
Service (advice, treatment, etc.) to individual cases and groups	Health Services (Chap. VIII, § 1)	Education (Chap. X)

Public utilities are also linked to the general development of the City. Clearly old industries cannot expand or new industries be introduced, nor yet can housing be extended, unless the capacity exists for improving communications and increasing the provision of power, heating, lighting, water, and disposal of sewage.

All over the country public utilities are characterized by a wide variety in methods of organization and control. The fundamental factor is whether prices can or should be charged to the consumer sufficient to cover cost. If this is not possible, or not thought desirable, private enterprise working for a profit will not enter the lists. If prices to cover cost are possible and thought desirable, operation may be either by public authority or by private enterprise. Now for public utilities, in the strict sense of gas, water, electricity, and communications, prices can and, it is thought, should be charged to consumers. It is therefore possible for private enterprise to operate. In Worcester, gas is provided by the Worcester New Gas Light Company (a private enterprise), while electricity and water are provided by the City.* Postal services and telephones are, of course, a national enterprise.

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Boroughs, Municipal Boroughs, and Urban Districts according to rates charged for electricity and gas, as in Table I, it appears that these public utilities are on the whole cheaper in County than other Boroughs and cheaper in Boroughs than Urban Districts. For electricity, over half (41 out of 81) the County Boroughs received on average 1·01d. to 1·50d. per Board of Trade unit, but far the most frequent average rate among

TABLE I

NUMBER OF TOWNS WITH DIFFERENT CONCENTRATION OF POPULATION TABULATED BY RATES CHARGED FOR ELECTRICITY AND GAS

	County Boroughs		Boroughs (Other)		Urban Districts	
ELECTRICITY (Average price received per B. of T. Unit, 1938–9)						
Up to 1d.	3		4		0	
1·01d.–1·50d.	41*		40		13	
1·51d.–2·00d.	29		60		13	
2·01d.–2·50d.	5		21		4	
2·51d.–3·00d.	2		18		13	
Over 3d.	1		6		10	
TOTAL ..	81		149		53	
GAS (Charges per Therm within the Town, 1944–5)						
Under 8d.	6	51 (66%)	3	64 (41%)	2	21 (36%)
8d.	8		8		1	
9d.	12*		9		5	
10d.	13		21		5	
11d.	12		23		8	
1s. 0d.	11	16 (20%)	20	49 (32%)	12	18 (31%)
1s. 1d.	5		29		6	
1s. 2d.	6	11 (14%)	27	42 (27%)	9	19 (33%)
1s. 3d.	3		10		7	
1s. 4d. and over	2		5		3	
TOTAL ..	78 (100%)		155 (100%)		58 (100%)	

*Worcester is included in this group.

Boroughs was 1·51d. to 2·00d. per unit,* and among Urban Districts as high a proportion as 23 out of 53 received on average over 2½d. per unit. For gas sold within the town limits, 66% of County Boroughs (51 out of 78), 41% (64 out of 155) of Boroughs, but only 36% (21 out of 58) of Urban Districts charged under 1s. per therm. A further confirmation of the lower cost of public utilities in areas of more concentrated population is that many towns (regardless of whether operation was under private or municipal control) the charge was more for gas outside than within their boundaries. Among those County Boroughs where separate tariffs are listed, 27 (including Worcester) charged the same and 28 charged more outside their boundaries. Among Urban Districts, 16 charged the same and 8 charged more. This relative infrequency of a differential tariff in the smaller towns forming the Urban Districts further demonstrates the economy of a concentrated population, since there would be less difference between concentration of population in and outside a small town than in and outside a large town.

For both gas and electricity Worcester is a typical County Borough in having low charges. For both utilities, indeed, it charges rates that are relatively low even among the low-charging County Boroughs. For gas, Worcester's charge per therm is given in the 'Statement of Rates Levied'† for 1944–5 as 9·3/8d. For electricity, its average price received per Board of Trade unit is given for 1938–9 as 1·14d. According to the City Electrical Engineer, this average price was in 1931 1·4d. but had fallen to 1·05d. in 1938 and 0·9d. in 1943. During this period (1931–43), when the price fell by 36% the unit consumption rose from 14·9 to 61·7 millions, or over fourfold.

No complaints were received in the course of the house-to-house inquiry or the industrial survey about the general level of prices charged by public utilities.

There were numerous complaints, however, from householders in the neighbouring area of the smell from the sewage-disposal plant. It is possible that this smell can be avoided by separating factory effluent from sewage. If so, there would be no need to change the site of the sewage works, since, though close, they are not visible from the river and are unobtrusive from all directions.

Complaints were also received from one or two important factory owners on the score of water supplies. With the building of new houses using more water per head (e.g. substituting houses with a bath and perhaps seven taps for houses with only one tap), domestic demand for water will increase without any increase of the population. And if industries are extended, the additional demands from industry, and from additional population which that extension makes possible, must also be provided for. The City's water supply is taken in from the Severn just above Pitchcroft. The existing water works were constructed in 1770 and extended in 1858, 1923, 1927, and 1939. Today, in 1946, Worcester has a total daily water output of 3 million gallons, or roughly 45 gallons per head; nevertheless there have admittedly been water shortages since the first year of the war, due largely to the influx of industries and evacuees. The difficulty is that the water works has not sufficient capacity. Three times as much water could be pumped, but the filtering plant is not capable of dealing with it.

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*Acknowledgments are due to Mr. W. Allison Davies, the Borough Treasurer of Preston, for the original data contained in his 'Annual Statement of Rates Levied in Various Towns.' The latest available data were used—1944–5 for Gas, 1938–9 for Electricity.

†Op. cit.

To meet this shortage, the City Council has approved an extension (now before the Ministry of Health) which will increase the daily output of the works immediately by 2 million gallons making a total of 5 million gallons. It might be possible also to relieve demands on the City's total water supplies and at the same time attract and keep industries by encouraging and helping factories to bore for their own water.

It has been suggested to us by Professor L. J. Wills* that the boring of wells within the City boundary might tap the water-bearing Keuper sandstone formation lying at the base of the Keuper marls at a depth of probably 500–600 ft.† An experimental boring should, however, first be made (possibly by the City) to avoid the risk of large investment based on false hopes. With modern technique, developed in boring for oil, a six-inch boring would probably not cost more than one pound per foot. The reason for caution before encouraging the investment of large sums in substantial borings is the risk that the water, undoubtedly obtainable from the Keuper sandstone, may be impregnated with gypsum or may be salty or too hard. As explained in Chap. II, Keuper marls lie in some thickness immediately below the 'drift' deposits on which Worcester is mainly built. This marl-like clay is not water bearing and dries up, thus allowing pollution through the cracks. Boring is thus necessary before it can be established whether the Keuper sandstone below the City is in fact polluted by seepage of gypsum, salt, or other unwanted elements through the marl. But once the purity of the water is established, it can be kept pure from pollution when the well is constructed by a proper lining to exclude extraneous elements. Such a well may provide most abundant supplies of water useful for industry. The Keuper sandstone has in neighbouring areas, e.g. Bromsgrove, and Tyburn inside the

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*Professor of Geology, University of Birmingham.

†See Ch. II, The Physical Basis.

Birmingham city limits, yielded at rates of about 10,000 gallons per hour.

Finally, the public utility of communication facilities must be surveyed. Since postal and telegraph charges are uniform for all distances within the country, the question of local prices only arises over telephones. It has already been pointed out that a town like Worcester offers the possibility of more numerous contacts within the area of local telephone rates than does the countryside. Worcester has a further special advantage for industrial contacts, since its proximity to the Birmingham district allows low telephone rates with a great number and variety of businesses. But for the ordinary citizen the accessibility from his home or his office to post offices, telephone kiosks, and letter-boxes is perhaps the main concern. The position of post offices in Worcester is given in Fig. 38. In the house-to-house inquiry the only complaints were about inaccessibility of letter-boxes in the Gorse Hill area. These complaints seem, on examination, to be justified. In the district east of the railway quite a number of houses appear to be half a mile from any letter-box or post office. If the same rule of a quarter of a mile maximum distance from home is applied to the posting of letters as to obtaining other frequently occurring necessities such as groceries, this district is below standard. Altogether sixteen post offices appear in Fig. 38—as the map shows, thoroughly scattered. Probably a post office should form part of the neighbourhood centre together with clinics, primary schools, and fairly frequently occurring household requirements. If this is to be the rule, several post offices fail the test because they are not in the central site of their neighbourhoods. The whole question of building up neighbourhood groupings will be discussed in the last chapter of this Survey.

§ 3. AMENITIES

(*a*) AMENITY IN GENERAL

AMENITIES were distinguished from health services and public utilities as contributing to the recreation and culture of the general public rather than to their physical health and prosperity. Yet amenities are closely connected with health, since health is sustained by recreation, and with public utilities since both are facilities open to the general public. Some forms, like concerts or libraries, have a cultural and educational element and hence are related also to education.

Nearly every city and town in the country proposes to improve its amenities for the benefit of its own citizens. This is not surprising in view of the rising standards of living of the mass of the people and the distinctly shoddy level of public amenities of so many British industrial towns. In planning amenities, however, care should be taken to select those which will be most widely appreciated and, democratically, to find out the wants of individual citizens. In the house-to-house inquiry and the general questionnaire circulated with the electricity accounts, opinions were obtained on the wants of Worcester householders in this respect. Those amenities most extensively wanted will be mentioned in due course.

In Worcester there is reason for particular attention to amenities. It is first of all a county town that should attract residents from all over the county (or at least from its area of influence) to the special services a concentrated population can afford. In addition to such county visitors, Worcester must also be attractive to visitors from the whole country and from overseas. In planning for the future, suggestions were made in Chap. IV that the city should be developed further than at present as a holiday and leisure-time resort. Assuming the policy of holidays with pay more widely adopted, and the resumption and perhaps the increase of the American tourist traffic, catering for visitors may well become an industry of leading importance and employ a large proportion of the City's workers. Worcester already attracts visitors by reason of its magnificent Cathedral, so finely situated, and of several other buildings of architectural and historical interest, some of which are illustrated in Figs. 58–64. This is not a guide-book, but it may be said here perhaps that existing guide-books to Worcester do not make enough of the several attractive early eighteenth-century city churches built by Thomas White: St. Swithin's, St. Nicholas, and All Saints. The towers of these churches, together with that of the Cathedral and the tapering spire of St. Andrew's, present a delightful skyline and give character to the streets of the central shopping area (see, for example, Figs. 42 and 71). Undoubtedly more could be made of existing buildings and their sites by reconditioning and by opening up vistas. A map showing the position of buildings especially worthy of preservation is given in Fig. 57.

The river embankment next the Bridge, at present spoiled by factory buildings, rag-and-bone warehouses, tenements, and dumping of litter in the river bed (see Fig. 73), is a case in point. There are few English cities that can offer such possibilities for a noble city centre, fronting the waterside and dominated by the Cathedral. To judge from the comments of the sample of householders who were visited, this is fully appreciated by Worcester citizens. Many householders compared the present river-front layout unfavourably to that of Evesham.

(*b*) A LIST OF SPECIFIC AMENITIES

The architectural layout and landscaping of a City, particularly of its downtown central area, is its prime general amenity; and care (as said in Chap. IV) must be taken to avoid industrial nuisances and also to abate household smoke in this area. But to both visitors and citizens there are also certain specific amenities that can be planned for. The list that follows may be used as a guide for possible plans. Such amenities may be grouped under headings as desired. But a city of cultural traditions, such as Worcester, should be distinguished for offering indoor as well as outdoor pleasures, and for making these pleasures as far as possible educational. As a holiday resort it should not compete with, say, Blackpool; and as a centre for County residents with plenty of outdoor pursuits of their own, Worcester should specialize in indoor entertainments. So amenities have here been grouped to bring out the comprehensive outdoor and indoor recreational and educational nature of Worcester's attractions, and potential attractions, to citizens and visitors.

LIST OF AMENITIES AS GUIDE TO PLANNING

I. OUTDOOR—POTENTIALLY EDUCATIONAL
- Organized tours to places of interest

II. OUTDOOR—PHYSICAL RECREATION
- River boating; fishing
- Swimming-pools
- Playing-fields; golf links; tennis courts
- Sports stadium; racecourses
- Parks and associated activities (bands, bowls, etc.)
- Allotments.

III. INDOOR—POTENTIALLY EDUCATIONAL
- Visits to buildings of architectural and historical interest
- Concerts
- Theatre
- Cinemas
- Museums (especially local interest)
- Library and reading-rooms
- Clubs and societies (e.g. literary, music, archaeological, drama, etc.)

IV. INDOOR—PHYSICAL RECREATION
- Skating-rink
- Dance halls
- Racket courts, etc.
- Gymnasia
- Indoor swimming-baths

These outdoor and indoor amenities may be considered in turn.

(*c*) OUTDOOR RECREATION AND TOURING

The potential indoor and educational attractions of Worcester should not overweight the indoor-outdoor balance of amenities. With its river, its surrounding scenery and hills to which footpaths and commons give access, and its comparative warmth and low rainfall (see Chap. II), Worcester in fact provides natural conditions for a healthy and recreational outdoor holiday.

Apart from the possibility of outdoor concerts, pageants, and plays, education can be furthered by visits to many places of historic, architectural, and geological interest. Such visits can be encouraged by cheap holiday tickets and by organized tours in motor buses or steamboats. This should be popular among visitors as well as residents. For Worcester offers, within a comfortable return trip, a wealth of interests. Within a ten-mile radius are Ankerdyne Hill above the Teme; the Malverns with their hills, Spa, Priory, and Abbey; Droitwich; and Pershore with an Abbey church and boating on the river Avon. Within a further fifteen to twenty-five miles are Bewdley with Wyre Forest, Stratford-on-Avon, Evesham, Cotswold towns and villages, such as Broadway, Winchcomb and Chipping Campden, Bredon Hill, Tewkesbury, Deerhurst, Gloucester, Cheltenham, and Hereford.*

For pleasure boating, Worcester offers a pleasant reach of the river Severn from just below the Cathedral to Bevere Lock two miles up, and beyond. The banks are sandy and lined by bushes and trees with wooded hills visible on either side. Boats may be hired from Pitchcroft or from the centre of the town. But the pleasure of boarding a boat without a long walk and from almost under the shadow of the Cathedral is marred by the unsightly workshop buildings and dumps on the west bank just above and below the railway bridge. If Worcester is to be an attractive boating centre like Evesham or Stratford, these buildings should be eliminated or, at least where possible, screened by trees. Farther up, on the east bank, the grandstand of the racecourse is built with its back to the river and is a blot on the view across Pitchcroft. Apart from these two eyesores, however, the river above the Bridge is remarkably free from unsightly building, and it would be well worth while attracting visitors and developing a natural asset for citizens, too, by making the few alterations suggested along the river banks. Adequate and suitably designed boathouses and landing-stages should, of course, be built.

Outdoor swimming-pools or 'lidos' were rapidly coming into popular favour just before the war and would provide a substitute at Worcester for the lack of sea-bathing. One such pool might be built near the power station, where the water could be warmed as a mere by-product of watercooling. For the more hardy bathers, facilities on the river might be improved upon. The present bathing-place at Pitchcroft faces some of the unsightly workshop buildings on the west bank which have already been mentioned, and these detract considerably from the amenity of the place. Though necessarily at some distance from the centre of the City, a bathing-place might be planned on the clear-running Teme.

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*The towns appear in Fig. 2, the hills in Fig. 6.

Visitors as well as residents like to watch outdoor sporting events. There is an annual regatta on the river, and the City has at Pitchcroft a racecourse unusually near the centre of town. The city also has a famous county cricket ground with a unique view of the river and Cathedral as background. But a well-designed stadium in a good setting might also be considered, not only for sports but for the performance of pageants and outdoor plays and concerts.

Some controversy has arisen about the future of Pitchcroft racecourse, and at the request of the Reconstruction Committee, questions about Pitchcroft were asked in the course of the house-to-house inquiry. Investigators were carefully instructed with regard to their approach to this question. Householders were asked whether they had any suggestions to make as to the future use of Pitchcroft. Would they like it to remain as it is? Were they interested in racing? Would they like it developed in any way, and if so, had they any suggestions to make? All information was offered voluntarily, without prompting or suggestion from the investigators. Where the person interviewed had no comment to make, this was noted; and where they definitely said they were not interested, this was also noted.

27·8% of householders answering were not interested, and 3·7% made comments which were not applicable. 45·3% wanted Pitchcroft to be a recreational ground without racing, 4·5% a recreational ground with racing; 17·4% to leave Pitchcroft as it is with racing, and 1·3% as it is without racing.*

The most outstanding demand for Pitchcroft was a well-laid-out park with pavilion, cafés, swimming-pool, and many other amenities. There was also a substantial demand for a playground designed especially for children, i.e. with sand pit, safe paddling-pool, etc. Others wanted part of Pitchcroft to be set aside at least for a swimming-pool. There was a smaller demand that the ground should be specially laid out for all kinds of sports—football, cycle racing, etc.

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*As racing brings a large number of visitors into the City twice yearly, it is likely that the question of its future is of particular interest to traders. Traders were covered by the inquiry in so far as they were householders within the City. Those traders who lived over their shop premises within the centre of the City would not, however, be covered in the inquiry. The number of these residential premises not covered was approximately 435, which is equivalent to another 29 house visits in addition to the total of 900 visited. Supposing all these 29 had been definitely in favour of racing, it would have altered the figures to 24·4% definitely in favour and 71·8% total not in favour of racing. The number of traders not represented, however, would be smaller than this, as in many cases it is not the trader himself who lives in the premises over his shop.

For visitors, open spaces are important in the centre of the area (particularly for lawn tennis, bowls, and putting, that take up little room), and golf links (as at present) on the outskirts of the town. But to be accessible to the scattered *resident* population, parks and particularly playing-fields and allotments should be widely distributed. The position of allotments within the City boundaries can be seen in Fig. 1 (*Frontispiece*). They appear to be ample in number and well distributed. Possible improvement in their appearance is sketched in Fig. 94.

The National Playing Fields Association have laid it down that six acres per thousand population should be reserved for playing-fields. On this basis, Worcester should have 360 acres. In fact, there are 346 acres of public open space provided by the City Council, laid out as parks, recreation grounds, playing-fields, or other sports grounds. It is difficult to assess the exact acreage laid out specifically as playing-fields. In addition, however, to these public grounds, there is considerable acreage of private open space owned by sports clubs, factories, and schools. Some schools rent from the Corporation part of the playing-field accommodation at Pitchcroft (included in the figure of 346 acres given above); but in addition they own between them their own playing-field facilities, amounting to approximately 35 acres. Worcester approaches fairly near the standard set by the Playing Fields Association. By approaching this standard, however, it does not necessarily follow that all existing clubs are adequately catered for. It was found during the survey of recreational facilities that several clubs (e.g. clubs within the Worcester and District Amateur Football League, clubs in the Youth Cricket League, and the Worcester Hockey Club) were inadequately provided for. Moreover, the City Cricket Club has no grounds of its own; it uses the County Cricket Ground, and all its fixtures have to be fitted in with times when the ground is vacant.

Parks should be so distributed that residents have not too far to go and that they are safely and easily accessible to children. An analysis of the answers from the house-to-house inquiry shows that of all the grounds set aside for general recreation and leisure (see *Frontispiece*, Fig. 1) Gheluvelt and Cripplegate are far the most popular. These two parks have been carefully laid out, have well-kept gardens, a bandstand, and various special facilities which increase their attraction. Gheluvelt in particular caters exceptionally well for children—a feature recommended for Cripplegate by many residents in that part of the City. At Fort Royal there is a bandstand and a small children's playground, but most of the ground is too steep to be ideal for children. In St. John's, Pitmaston Park is quite popular. The only other ground laid out as a public park and specifically mentioned in answers by householders was Elbury. This and other surburban parks and general recreation grounds like Brickfields had only a limited appeal to their immediate locality, and they are of a different type from Cripplegate and Gheluvelt situated on main roads nearer the centre of the City. There are also several asphalted playgrounds one-half to three acres in extent—Fig. 77 gives an example.

Distance from home discourages the use of parks and children's playgrounds. In the house-to-house survey, answers on the use of playgrounds were obtained from 279 householders having children under 5 years of age. Where playgrounds were within a quarter of a mile of home, 42 out of 181 householders (or 24%) said playgrounds were used; where playgrounds were farther than a quarter of a mile, 14 out of 98 householders (or only 14%) said playgrounds were used. In the case of parks, complaints as to distance came from many householders in Area 4 (Rainbow Hill, Tolladine, and Brickfields) and Area 5 (Spring Hill, Cherry Orchard, and London Road) who possibly felt the lack of any near-by park like Gheluvelt or Cripplegate.

Some park or ground where children may play should, as a principle, be placed within a quarter of a mile of any house as part of a neighbourhood grouping. How far Worcester satisfies this principle can be seen in the *Frontispiece* (Fig. 1), and will be discussed in Chap. XI.

(*d*) INDOOR AMENITIES

Though Worcester has a rainfall relatively low for the western half of the country (see Chap. II), rain must not be forgotten as a summer possibility. Moreover, to avoid seasonal unemployment (see Chap. IV), Worcester should not confine its attraction for visitors to the summer months. Indoor amenities are therefore of great importance. Some of these, listed on page 181 under IV, give mainly physical and social recreation ;others, listed under III, have a cultural element and educational possibilities.

Worcester has a flying start over many other resorts in offering to visitors with serious tastes an interesting Cathedral, as well as other fine interiors such as the Guildhall and the Commandery—and cathedral services to attend. Every three years the Three Choirs Festival takes place at Worcester. Contrasted in interest are the Royal Porcelain Works and some of the glove factories open to visitors. Further indoor amenities already provided are a good shopping centre, several cinemas, a library, and a museum. The shopping centre will be described in Chap. IX. The existing theatre and cinemas (see Fig. 40) have the following seating capacity:

	Seats
Theatre Royal (Area 1)	935
Scala Cinema (Area 1)	900
Gaumont Palace (Area 1)	1,740
Odeon, St. John's (Area 2)	687
Northwick Cinema (Area 3) ..	1,068
Total	5,330

Another cinema, in the centre (Foregate Street), was being built when war broke out, and has not yet been opened. Its seating capacity is approximately 1,740.

The total seating capacity of Worcester cinemas, including this 'New Odeon,' is 6,135. This works out roughly at ten Worcester residents per seat, and more if the population round Worcester is added. The national average is roughly nine persons per seat. Worcester, if it is to cater for visitors as well as residents, could clearly expand its cinema accommodation.

In planning for amenities that are to be appreciated, popular opinion must, as already pointed out, not be neglected. Accordingly, in the questionnaire circulated generally with the electricity accounts,* the following section was included:

Which of the following do you think is most needed in the City?	*Place in order of importance to you.*
(*a*) Concert hall	1............................
(*b*) City orchestra	2............................
(*c*) Municipal theatre	3............................
(*d*) Swimming-baths	4............................
(*e*) Skating rink	5............................

2,038 questionnaires were returned answered. This did not constitute a sufficient proportion of the City's householders to act as a sample of general opinion. But over 850 householders put a municipal theatre, and almost another 800 a swimming-bath as their first choice—enough to show a substantial demand justifying action on the part of the City. Concert hall ranked third in popularity; there was little response to the other two suggestions of a skating-rink and municipal orchestra. Analysis of second and subsequent choices confirms the validity of the order of preference indicated above.

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*See App. II.

Visitors and residents would probably appreciate an extension of the museum, devoted to the history and natural history of the region, and a comfortable reading-room. For residents, branch libraries, with a reading room, should be established accessible to every neighbourhood. There is certainly a need for an up-to-date public hall. There is no hall of large size suitable for dancing, concerts, or amateur dramatics. The Public Hall in the Old Corn Market, used as a British Restaurant, is not really designed for any of those purposes. For want of any other premises, the Guildhall, built in 1721–3, is continually used for popular dances, but hardly possesses the modern requirements furnished by a 'palais de danse.'

(*e*) ACCOMMODATION FOR VISITORS

Amenities in Worcester should appeal to residents, visitors for the day from the surrounding areas, and visitors or tourists staying many days. For the tourist and the long-term visitor it is necessary to provide accommodation in the City, and for tourists from overseas this accommodation should be of high quality if they are to be attracted in large numbers. Part of a letter to *The Times* of 24th April, 1945, from the managing director of the Savoy Hotel puts the matter clearly:

> Sir,
>
> The importance of the tourist trade has been emphasized by Mr. Bevin, and there can be no doubt that he is right. Before the war the foreign exchange which Great Britain acquired by the expenditure of tourists visiting this country was approximately £30,000,000 a year. As this was very nearly as much as our exports of coal, woollen goods, and vehicles, and more than our exports of chemicals, it cannot have been a negligible factor in the balance of trade.
>
> It is an axiom that the tourist trade depends a great deal upon the quality of the hotels: the better the standard the greater the attraction. Great Britain has never thought it worth while to show much consideration to her hotel industry, and the difficulties of hotel-keeping have been greatly increased as a result. Fundamentally, a hotel depends for its success to a large extent upon its building. If this is obsolete or unsuitable, it is very difficult for even the most talented management and staff to make the hotel a success. Consequently it is most important for a nation desiring to attract tourists to ensure that the hotels are given every encouragement to keep their premises up to date.

A canvass of Worcester hotels (not including private hotels and boarding-houses) showed eight hotels in the central area and four in the sub-central area and the suburbs. The central hotels varied in their number of bedrooms from 6 to 45, with a total of 135. The sub-central and suburban hotels varied from 7 to 22 bedrooms, with a total of 47. The joint total of 182 bedrooms is clearly insufficient for a resort to attract visitors on any scale. It is shown in Table I of Chap. IX that Worcester had a smaller number of persons employed in Hotels, Inns, Public Houses, and in Restaurants and Catering than Gloucester and a very much smaller number than Cheltenham, though the population of all three towns was much the same. If Worcester is to develop as a tourist centre and pleasure resort, hotel and café accommodation must clearly be increased. A new hotel on the river front, near the centre of the City, might prove attractive. A possible view from its windows is given in Fig. 75.

Certainly the development in Worcester of amenities for visitors and tourists, without providing places for visitors to stay, would be short-sighted and illogical. An advice bureau like the local French 'Syndicats d'Initiative,' where information about the city and places to stay could be co-ordinated, would further help to develop Worcester's amenity assets.

§4. RECOMMENDATIONS

1. Many existing Health and Welfare services need wider distribution so as to be easily accessible to more homes. They include General Practitioners' consulting rooms, Day Nurseries, Maternity and Child Welfare Clinics, and clinics at schools for minor ailments.
2. Special needs of Worcester include an extension in the accommodation for maternity cases; a Holiday Home for girls who have in the past been on probation or 'moral welfare cases'; a Crematorium.
3. The present central Maternity and Child Welfare Clinic in Lowesmoor and the School Clinic at Tudor House need removal to a more central site, where a larger and more convenient building could house a complete Health Centre.
4. Particular attention should be given to the health and welfare of old people, and housing accommodation specially designed for the purpose should be provided.
5. New ventures in social relations in a city are proposed in the form of School Stewards to make contacts with parents and between school and clinic; and of Mothers' Helps to let married couples have an occasional evening out together, free from the care of children.
6. Suggestions are put forward for meeting complaints about sewage disposal and for increasing private supplies of water by boring wells. Some areas of the City should have more letter-boxes, and Post Offices should be at the neighbourhood centres.
7. New amenities or extensions of amenities that are proposed, include boating facilities, swimming-pools, a stadium for outdoor entertainment, a concert hall, and a public hall specially for dances. Even more important than these (as judged by popular demand) are a new theatre and modern enclosed swimming-baths. Extra pitches should be available

for certain sports clubs in the City. Answers from householders favoured converting Pitchcroft into sports grounds and playgrounds and a pleasure park.

8. To develop Worcester as a centre for amenities more could be made of existing buildings and their sites by reconditioning and opening up vistas (see Chap. XII). The river embankment next the Bridge offers possibilities of a unique City centre fronting the waterside and with the Cathedral as background. Up river certain eyesores on the banks should be eliminated or screened.

9. If, as proposed in Chap. IV, a Worcester of enhanced amenity should develop as a resort, café and hotel accommodation should be considerably extended.

CHAPTER IX

RETAIL DISTRIBUTION

This chapter surveys in the light of needs and demands the central and local shopping facilities of Worcester. The existing pattern is examined area by area in some detail for the different trades with a view to determining the adequacy of old and the need for new shops; and the advantages and possibilities of centralized, sub-centralized (by neighbourhoods) and dispersed sites for each trade. Such a practical examination is needed in the planning of all towns large enough to have suburbs. But the plan for shops in a market town like Worcester, which caters both for its own and for a surrounding rural population, must provide for three sets of consumers: urban, central and local; and rural.

The population of the city itself can quickly reach the city centre, where they may periodically meet all their wants. But in the interim between these periodic visits, the more frequent wants will usually be met locally. Frequency is determined by the number of times any one person demands the commodity and by the universality or 'commonness' of the demand, i.e. the proportion of persons in the community making such a demand. Clearly, the more frequent (in this full sense of the word) the demand for a commodity, the smaller the community required to support economically its sale in a local shop. In a town, the local shops will either be at suburban shopping centres or, for very frequent wants, will be dispersed and thus close at hand, say within a quarter of a mile from home. The rural population, on the other hand, meets its more frequent interim wants at village centres, often a considerable distance from farm or cottage; but periodically, say once a week, country folk will make an expedition to a town to secure less frequent wants, including the commodities in more specialized shops. Thus market towns like Worcester may, for special goods and for services required less frequently, serve in their central shops a very wide agricultural area.

In the future, the purchasing power of agricultural areas is likely to be substantially increased over pre-war standards, owing to national wage policies: Worcester shops should therefore be prepared to meet a much-increased demand from this source. The shops in the centre of the City may also expect an increased volume of trade over the next few years, owing to postponement of purchase of durable goods during the war; and eventually they will benefit by increases in tourist and holiday traffic. Plans for an enlarged shopping centre will thus be meeting a strong economic demand fairly general throughout the country.

§1. WORCESTER AS A SHOPPING CENTRE

THE analysis of the industrial structure of Worcester City in Chap IV, § 1, based on the 1931 Population Census, demonstrated the fact that Worcester is a service centre for the surrounding rural areas. A lower proportion of all employed were engaged in distribution than was found to be the case with Evesham and the smaller market towns of Herefordshire; this was accounted for, however, by Worcester's considerable industrial elements, and compared with neighbouring County Boroughs (see Fig. 11) its proportion in distribution ranked high, indicating its importance as a market and shopping centre.

Apart from this set of data, moreover, statistics showing that there is approximately one shop for every fifty persons normally resident in Worcester bring the City into the category of a shopping centre.* We know, too, that it is an important cattle market and a centre for dealers in agricultural produce (see Chap. VI); in addition, transport figures and other information show that it serves a considerable surrounding area. Indication of the extent to which Worcester serves this surrounding area in retail distribution is given by the Food Registration figures, which show the population shopping for food was in 1944 about 70,000, i.e. 10,000 greater than the actual population of the City. This population is likely to do all its shopping in Worcester. In addition, the bulk of the population in the area of Worcester's influence comes in for *some* of its shopping.

After proving that Worcester *is* a shopping centre, we have still to determine whether it is satisfactory for its potential clientele, i.e. those

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*See Henry Smith: *Retail Distribution.*

people living within the area which has been shown to come under Worcester's influence for many other purposes. To be a good shopping centre in this sense it should offer:

(*a*) Sufficiency and variety of choice in both type and quality; efficient service;

(*b*) Convenient access, i.e. efficient transport services, good roads, adequate parking provision, etc.;

(*c*) Adequate restaurant facilities for visiting shoppers;

(*d*) Comparable prices with other like centres.

(*a*) *Determination of Standards; Sufficiency, Variety, and Efficiency*

Mere numbers and sizes of shops existing in a town do not of themselves indicate whether it is a good shopping centre or not, as obviously the type and quality of shopping facilities are important, and their variety must take account of the population and type of area to be served. It is impossible for a shopping centre to expand indefinitely for any given size of market, as there is a point beyond which it is uneconomic to go; but up to this point it is necessary to ensure that the economic quota of shops contains a sufficiently representative number of shops of each trade (bearing in mind any particular local needs of the district) and that they are reasonably efficient.

Worcester requires the types of shops to cater for the population of its area of influence as well as its own resident population (which is partly industrial) and an exacting but small county clientele. In addition, it has a considerable tourist population, situated as it is between two resorts (Malvern and Droitwich) and itself possessing unusual attractions for visitors.

In order to compare the position in Worcester with shopping facilities in other towns, it was decided to take some neighbouring towns of equal population. Cheltenham, Gloucester, and Dudley were selected. Cheltenham and Gloucester are towns of similar type and competitive centres for certain outlying areas in the county, and Dudley (the other County Borough of Worcestershire) is a Black Country town offering scope for comparison between a purely industrial centre and a county or marketing centre. In addition to the four towns, Burton was also taken, because it had a population of the same size as Worcester in 1931, and was also a County Borough and market town, though with a much smaller degree of influence on the surrounding country.

Table I gives the distribution of persons employed within the most important classes of retail trade for these five towns. The trades taken have been selected without bias, being those for which the 1931 Census provides comparative statistics for 'selected distributive industries.'

TABLE I

PERSONS IN BRANCHES OF RETAILING AND SERVICES IN WORCESTER AND SELECTED TOWNS, CENSUS 1931

	Worcester	Cheltenham	Gloucester	Dudley	Burton
Population ..	50,497	49,418	52,937	59,579	49,486
I. Consumer's Necessities: Daily Wants					
1. Grocery and provisions	383	338	326	259	209
2. Making of bread and flour confectionery	246	284	229	348	211
3. Milk and Dairy products	114	116	92	91	88
4. Vegetables and fruit..	114	176	135	123	83
5. Meat	212	222	196	196	203
	1,069	1,136	978	1,017	794
II. Consumer's Necessities: Periodic Wants					
6. Metals, metal goods, and tools ..	142	101	77	38	81
7. Dealing in coal	152	154	102	151	71
8. Boot and shoe*	88	76	78	71	60
	382	331	257	260	212
Sub-totals I and II	1,451	1,467	1,235	1,277	1,006
III. Composite Trades: Necessities and Luxuries					
9. Books, newspapers, stationery, etc.	94	120	116	49	85
10. Drapery, hosiery, and millinery ..	532	732	507	367	366
11. Drugs and druggists' sundries ..	80	139	108	58	71
12. Mixed retail, including departmental stores	522	506	755	250	469
	1,228	1,497	1,486	724	991
IV. Luxuries					
13. Tobacco	48	72	39	38	27
14. Sugar confectionery	77	87	89	44	62
15. Fish and poultry	59	113	64	56	39
16. Dressmaking*	194	215	113	98	55
17. Cycles, motors, motor spirit, etc., garage services	253	319	284	91	122
	631	806	589	327	305
Sub-totals III and IV	1,859	2,303	2,075	1,051	1,296
Sub-totals I, II, III, and IV ..	3,310	3,770	3,310	2,328	2,302
V. Services and Catering					
18. Laundry and job dyeing	258	449	175	34	83
19. Hairdressing, etc.	118	153	145	114	82
20. Hotels, inns, public houses	381	570	393	274	228
21. Restaurants and catering	204	270	265	101	84
	961	1,442	978	523	477
Grand Total, I–V	4,271	5,212	4,288	2,851	2,779

*Tailoring and boot and shoe repairing have been excluded from the table, as in the Census manufacturing concerns were included, thus rendering true comparison of the service element impossible.

When the different trades are grouped, as in Table I, it can be seen that the numbers employed in trades classed as 'consumer's necessities,' i.e. in Groups I and II, are more constant from town to town than trades coming within the 'luxury' group, demonstrating that for those goods for which there is an inelastic demand, the play of a comparatively free market has in a large measure been successful in adapting supply to demand. Compared with its population, the numbers in Dudley are low, and they are also lower in Burton than in the other three towns; this is the result we would expect from the type of town and the extent of the surrounding area which it serves. Within some of the trades classified as periodic 'necessities,' there are certain variations. Where this is the case, it is due to some local peculiarities, e.g. metal goods and tools show a high number in Worcester, which is the centre of an agricultural district.

In trades, by contrast, where the goods retailed are mainly luxury articles (Table I, Group IV) with a highly elastic demand, the whole group manifests considerable variations between the different shopping centres. It is items in these trades which are especially significant in determining whether a shopping centre is comparatively good or bad. It is interesting that while in Groups I–IV taken together, Worcester and Gloucester had the same number of persons employed, Worcester had the larger number in Groups I and II, and had more people in the dressmaking trade; Gloucester, however, had 755 against Worcester's 522 in mixed retail trades, including Departmental Stores, and it had noticeably more in the Groups classified as books and newspapers, drugs and druggists' sundries, cycles, motors, and motor spirits.

For County Boroughs, the Census gives us more extensive information than for other towns, such as Cheltenham. This enables us to obtain figures of persons employed in other trades containing a luxury element. Four such luxury trades were not distinguished in Table I. The persons employed were (in 1931) as follows*:

	Worcester	Gloucester
Furniture	135	97
Jewellery	27	20
Wines and Spirits (retail)	27	10
Pottery and Glass ..	21	5
TOTAL ..	210	132

In each of these trades, Worcester ranked higher than Gloucester.

Taken all round, it would appear that Worcester and Gloucester rank about equal as shopping centres, but where luxury goods are concerned, in some trades Worcester is better served, and in others, Gloucester.

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*Great Britain has not yet taken any Census of Distribution and recourse must be had to the Census of Population Industry Tables. Table I (p. 193) quotes Census Table 5; the data here are from Census Table 2.

In the Services Group of Industries (Table I, Group V) Worcester appears to be better equipped with laundry services than Gloucester, fewer persons were employed on hairdressing; and in restaurants and catering there were only 204 against Gloucester's 265.

Compared with Cheltenham, neither Worcester nor Gloucester appear to be such good shopping centres, as they rank much lower in all the Luxury (Table I, Group IV) Group of trades. In all cases, Cheltenham appears to cater more exclusively for people with higher incomes and for the more leisured type of person who would be expected to reside at a spa. Thus considerably more people are employed in the retail distribution of books and stationery, cycles, motors, and motor spirit, drugs and druggists' sundries, and Cheltenham seems particularly well equipped for Services—in laundry, hairdressing, and in hotels and catering establishments.

On the other hand, Worcester compares as a shopping centre favourably with both Dudley and Burton. In Dudley, the number employed in almost every Group of retail trades was lower for 1931 than in Worcester. The most marked difference was in the Luxury and Services Groups (Table I, Groups IV and V) of trades. Since Dudley (see Fig. 2) is close to several other towns of considerable size, and is located within an industrial district, it is not surprising that the town makes less provision for visitors, in the way of hotels and catering, and retail trades such as cycles, motors, and motor spirit, etc.

Burton provides a better comparison with Worcester, as their populations were similar in 1931 and they are both located in an agricultural area. The shopping population of Burton, however, is not likely to be so great, nor so widely distributed as that of Worcester. It is not a County Town, and the agricultural area which it serves is less extensive, owing to the stronger attractions of Derby only twelve miles away. The figures given in Table I bear out the fact that Burton does not need to cater for those with higher incomes and more leisure to the same extent as Worcester.

More detail of the variety of retailing in Worcester is given in Table II, showing numbers of shops (not totals employed) in different trades found in the Central and the Suburban Areas.* The normal daily markets should be added to the Central Area: (1) Flower and Fruit Market in High Street and (2) Meat and Fish Market in the Shambles. On Saturdays women from the surrounding countryside bring in farm produce, etc., to sell in the Flower Market; in addition a small General Market is carried on by licensed stallholders in the Old Sheep Market, Angel Place.

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*For definition of Areas see footnote, p. 205.

TABLE II

RETAIL PREMISES WITHIN THE CENTRAL AREA AND SUBURBS CLASSIFIED ACCORDING TO THEIR MAIN TRADE, 1945

Classification	Central shopping area	Sub-central and suburban areas	Totals
I. Food and Tobacco—Retail Shops			
1. Meat (including cooked meats)	38	37	
2. Grocery and provisions	28	43	
3. Greengrocery, fruit, and flowers	25	30	
4. Confectionery (sugar)	21	18	
5. Tobacco	17	12	
6. Bread, cakes, etc.	13	21	
7. Fish, game, and poultry	8	2	
8. Wines and spirits	6	1	
9. Specialist foods and herbs	2	—	
10. Milk and dairy produce	1	9	
	159	173	332
II. Food—Restaurants, Catering, etc.			
11. Public houses	51	92	
12. Hotels	9	5	
13. Cafés and teashops	10	8	
14. Fish-and-chip shops	4	23	
15. Other unlicensed catering (milk bars, etc.)..	4	3	
	78	131	209
III. Clothing, etc.			
16. Outfitting (men's, women's, and children's)..	49	10	
17. Boots and shoes	22	1	
18. Drapery and Haberdashery	20	13	
19. Gloves, hosiery, and leather clothes	11	2	
20. Millinery	5	1	
21. Rainwear, travelwear, and sportswear ..	4	—	
22. Furs	3	—	
23. Corsets	3	—	
24. Wool and art needlework	5	2	
	122	29	151
IV. Furnishing and Household Goods			
25. Furniture and soft furnishing	23	1	
26. Hardware and agricultural implements ..	10	5	
27. Decorating	7	30	
28. Antiques..	7	5	
29. China and glass..	3	—	
	50	41	91
V. Books and Stationery			
30. Stationery	11	5	
31. Newsagents and booksellers	3	21	
32. Circulating library	1	1	
	15	27	42
Carry forward ..	424	401	825

TABLE II (*continued*)

RETAIL PREMISES WITHIN THE CENTRAL AREA AND SUBURBS CLASSIFIED ACCORDING TO THEIR MAIN TRADE, 1945

Classification	Central shopping area	Sub-central and suburban areas	Totals
Brought forward ..	424	401	825
VI. MISCELLANEOUS			
(*a*) *Retail Shops*			
33. Jewellery and silverware	12	6	
34. Electrical and gas appliances (including radio)	11	7	
35. Cycles and prams	11	9	
36. Drugs and medicinal goods	10	10	
37. Opticians	4	—	
38. Saddlery and basketware	3	—	
39. Music	3	1	
40. Coal (retail)	3	10	
41. Toys	2	—	
42. Fancy goods, picture frames, etc.	1	1	
43. Sewing machines, etc.	1	—	
44. Sports goods	1	—	
45. Ropes, twine, and fishing-tackle	1	—	
46. Corn, seed, and dog foods	1	3	
47. Typewriters	1	—	
48. Monumental masons	1	3	
	66	50	116
(*b*) *Services*			
49. Hairdressers	34	32	
50. Laundry and dry-cleaning	8	2	
51. Garages and petrol	8	31	
52. Shoe repairers	5	18	
53. Photographers	2	4	
54. Funeral furnishers	2	7	
	59	94	153
(*c*) *Second-hand Shops*			
55. Second-hand books	2	—	
56. Other second-hand shops	9	4	
57. Pawnbrokers	1	—	
	12	4	16
(*d*) *Variety Chain Stores*	2	—	2
VII. GENERAL SHOPS	13	187	200
TOTALS ..	576	736	1,312

NOTES ON CLASSIFICATION OF TRADES

II, 12. *Hotels.*—This category does not include temperance and private hotels, nor boarding houses. In two cases within the Central Shopping Area and one case in the suburbs, although the premises are classified as hotels, they have no accommodation for residents.

III, 16. *Outfitting.*—This group includes tailors and dressmakers as well as outfitting shops, some of which specialize in particular types of outfitting, such as children's wear, etc.

(*continued on page* 198)

Table II covers more trades than Table I but does not attempt to group by the nature of the demand. It forms a basis for judging the variety of trades and the sufficiency of shops within each trade. The figures in Table II have been summarized in Table III to show the numbers and percentages of all shops within seven groups of trades. Nearly half the shops deal specifically with food, and a further large proportion (i.e. 15·3% of the total) are 'general shops.' The figures for the Central Shopping Area have been based on the information in Kelly's Street Directory for Worcester. Where shops have changed hands since its compilation, revisions were made up to 1945. In the suburbs the shops were classified to tally with Kelly's Directory, but numbers were based on personal survey. It was found that Kelly's Directory was a good guide for the Central Area, but was inadequate as a basis for the suburban districts. Shops have been classified according to their main trade. This means that the figures do not give any indication of the total number of main outlets for different commodities. For instance, except in the Central Area, the majority of shops include the sale of tobacco together with other commodities.

(continued from page 197)

IV, 27. *Decorating.*—This usually includes the services of plumber, glazier, etc., and in many cases forms part of a building firm. It would be natural to expect the working premises in these cases to be situated in the suburban districts, as is found to be the case.

V, 31. *Newsagent and Bookseller.*—In the Central Area includes W. H. Smith & Son and two small shops whose main trade in normal times is the sale of magazines, novelettes, etc. The only two firms which could possibly be classified under the term Booksellers are W. H. Smith and Boots; the latter have, however, been counted in under Category VI, 36—Drugs and Medicinal Goods. It would have been possible to include them under the heading Departmental Store, as they provide good outlets for stationery, china and glassware, leather and fancy goods, etc. It should also be noted that in some cases there is little difference between shops classified as Stationers and those classified as Newsagents. In the suburban districts the shops coming under the heading Newsagents and Booksellers are those selling newspapers and novelettes, magazines, etc.

V, 32. *Circulating Library.*—Two shops are included against this heading, as they are circulating libraries only. There are, however, several other shops, both in the Central Area and suburban districts, which carry on this activity as a subsidiary line of business.

VI, 36. *Cycles and Prams.*—In the Central Area, this category covers the sale of cycles, etc., often including prams, but in the suburbs it applies mainly to cycle repair depots.

VI, 40. *Coal.*—The figures applying to the retail distribution of coal are counted according to the situation of the depots, and so naturally these are to be found in the suburbs rather than in the Central Area, located at canal wharves or railway stations.

VI *(d)*, *Variety Chain Stores.*—The two stores included here are F. W. Woolworth and Marks & Spencer.

VII, *General Shops.*—The term General Shop relates to the small shops which sell a variety of goods (in most cases mainly provisions) but do not sell a sufficiently large quantity of any one particular line to justify their inclusion under any specific heading. In Kelly's Directory, the proprietors of such shops are usually described as 'shopkeepers.'

Co-operatives. The Branches of the Worcester Co-operative Society have been included under their various trade categories. We have taken the number as 14 Branches in the Central Premises and 12 Branches in the Suburbs.

TABLE III

NUMBERS AND PERCENTAGES OF SHOPS WITHIN TRADE GROUPINGS

Groups	Number	Percentage
I. Food retail shops	332	25·3
II. Food—Restaurants, catering, etc. ..	209	15·9
III. Clothing, etc.	151	11·5
IV. Furnishing and household goods ..	91	6·9
V. Books and stationery	42	3·2
VI. Miscellaneous	287	21·9
VII. General shops	200	15·3
TOTAL ..	1,312	100·0

Table II presents a picture of the variety and sufficiency of shops at present existing in Worcester. Their efficiency can be gauged objectively by their prosperity* or failure. The most patent indication of the latter is the

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**Note.* In a trial census of distribution carried out by a group of business concerns in six towns in 1937, comparison was made between total and average rateable values of shops, as these values were taken as the best available indication of turnover. Each of the towns taken had a population of approximately 30,000, so there is little purpose in comparing their results with Worcester. In any case, the shortcomings of this method are: (1) It is impossible to arrive at a standard of assessment as between towns, (2) It is not possible to make allowances for shops with dwelling houses, and (3) The rateable value for certain premises cannot be obtained. Although the figures must not be taken too precisely, it is worth making the following comparison of the average rateable values:

RATING ASSESSMENTS OF RETAIL PREMISES including SHOPS WITH HOUSES, HOTELS, and PUBLIC HOUSES

Town	Population	Total No. of shops	Average rateable value per shop
Kidderminster ..	30,000	853	£35
Stafford	30,000	666	£49
Wycombe.. ..	30,000	727	£76
Worcester.. ..	55,000 (approx. pop., 1937)	1,296	£68

As Worcester is a larger town, with 55,000 population (in 1937) as against a population of 30,000 in the other three towns taken, it would have more extensive suburban development, with consequently a larger number of suburban shops of low rateable value. To offset this, however, the shops within the centre of the City would tend, on the average, to be larger than in the other towns, and thus the figure of £68 average rateable value would not appear to be unreasonable in comparison.

number of shops lying derelict or frequently changing trade or ownership. There were approximately twelve small premises lying vacant at the time of the Survey (1944) within the Central Shopping Area, and during the war years it is known that at least ten shops within the suburban areas were closed down. None of these, however, had much effect on the position in Worcester as a whole, as they were mostly the parlour type of shop which were forced to close owing to inability to cope with the clerical and other work necessitated by war conditions. Apart from rateable value (see footnote on page 199), there is no source from which we can obtain reliable information on relative prosperity. Information was, however, secured relating to the opening of new premises, and the alteration or improvement of existing premises over the past twenty years, and is set out in Table IV.

TABLE IV

BUILDING OF NEW PREMISES OR ALTERATIONS TO EXISTING PREMISES DURING THE PERIOD 1923–39

	Central Shopping Area		Sub-central and Suburban Areas	
	Alterations or extensions	New premises	Alterations or extensions	New premises
Shop premises	58	23	19	100
Garages*	3	2	11	15
Public houses†	10	—	32	2
Totals ..	71	25	62	117

*In the case of garages, where two major alterations have occurred at different periods, these have been counted as two extensions.

†Alterations have mostly been to bring premises up to date, and in only a few cases have they involved any substantial extension.

In the suburbs, the alterations more likely involved some extension to the premises to cater for the increasing population within the suburban districts, rather than (as occurred in the Central Shopping Area) the erection of new shop-fronts, etc., to give scope for improved display. This probably accounts for the fact that though many more new premises were put up in the suburbs than in the centre (117 to 25), this was not true of extensions and alterations taken together. The central area in this respect surpassed the suburbs by 71 to 62. Later in this chapter the distribution of both old and new shops is analysed within the different

Suburban Areas of the City, where the shopping facilities of each are given fuller consideration.

There are no shops outside the area we have taken as the Central Shopping Area (with the exception of one shop in St. John's) which have more than ten employees.

Within the Central Area, the number of shops in the different trades which have more than ten employees is given in Table V. This also shows the increase in the number of employees within these shops during the period 1931–9.

TABLE V

NUMBERS OF SHOPS HAVING TEN OR MORE EMPLOYEES IN 1939

Category	No. of shops	Employees	
		Average per shop	Increase on 1931 figures
Food	7	35	38%
Clothing	6	30	69%
Furniture and hardware ..	5	29	28%
Miscellaneous	7	20	0%
Departmental store	2	71	57%
Co-operative Society*	—	—	69½%*

*Indicates the increase in the total number of employees throughout the City. No truly comparable figures can be given for the other two columns.

Table V shows the largest percentage increase in the number of employees from 1931 to 1939 to be in departmental stores, including the Co-operative Society, and in the clothing trades. In the miscellaneous group, the trades employing over ten persons were accounted for entirely by chemists, coal merchants, and corn, seed and oil merchants; there was no change in the number employed in this group during this period. The average numbers employed in these large shops in the three categories food, clothing, and furniture and hardware are very similar, the numbers in food shops being slightly the largest.

To obtain a more complete picture of the shopping services of Worcester and the numbers of persons employed, we had hoped, by the method of circulating a questionnaire to all retail premises, to collect reliable information of the numbers employed in the different shops and the approximate extent of their trade and service. The response, however, was not sufficiently good to furnish us with adequate details from which to draw statistical results. Certain relevant information was, however, received, which has been helpful in providing evidence in support of conclusions drawn from the other material at our disposal.

Apart from the statistics already analysed, the results of (1) the house-to-house survey within the City of Worcester and (2) information relating to road and rail travel, demonstrate that Worcester is a satisfactory centre for the whole of the area coming under its influence.

1. A number of people volunteered comments on shopping facilities in Worcester during our house-to-house survey. In each case the householders questioned were asked if they had any comments to make. In many cases there were no views expressed. Householders' 'reactions,' or their particular comments or lack of comments, placed them in four main categories, namely:

(*a*) Those who had particular comments to make on the local shopping facilities of their district. These will be dealt with later, in § 2.

(*b*) Some householders who had no comments, and a further number who said that the shopping facilities in Worcester were adequate and satisfactory. They represented about 55% of the households visited.

(*c*) Those who expressed a definite preference either for large or small shops. 25% of the householders expressed definite preference for large stores, the majority stating preference for the display type of store where they were able to walk round without being under obligation to buy. Several mentioned that these large stores provided a wider variety of choice. In many cases, Lewis's department store in Birmingham was cited as the type of shop people would like to see in Worcester.

A small number (10%) expressed preference for the smaller family type of shop; but in many cases it was stated that the smaller type of shop was liked for various standard commodities such as food, etc., but for clothes and the like, where a large variety of choice was required, the larger shop was favoured.

(*d*) Those who occasionally shopped in other towns for various reasons. They represented only 5% and went either to Gloucester, Cheltenham, or Birmingham. Often it provided the excuse for a day out. Clothing and furniture were most frequently mentioned as the commodities purchased elsewhere.

In addition to those who went elsewhere to buy clothes, several said that they found Worcester inadequate in this respect. This, however, is not a serious reflection on the facilities offered in Worcester for clothes. Clothes are a commodity in which personal choice plays a great part and for which people will always travel to other centres for the purpose of greater variety. Moreover, the tendency of some residents to shop elsewhere would be more than offset by the number of visitors coming from surrounding places into Worcester for the same purpose.

2. In Chap. V, dealing with Transport, it has been shown from which districts the main daily flow of passenger traffic came into the City, both by road and rail. Here it is only necessary to review the extent of travel to Worcester for shopping, though it is often difficult to disentangle this from travel to work and for entertainment. Figs. 15 and 18 show diagrammatically the weight and direction of general passenger traffic by both rail and road into Worcester.

Two types of bus service are definitely put on for shopping and entertainment: (1) Services linking up all the villages between Worcester and Hereford (two routes), Fromes Hill, Bromyard, Orleton, Clows Top, and Himbleton, and (2) the extra services operated only on market days and Saturdays, plotted separately in Fig. 16.

Many of the passengers on the long-distance buses alighted at Worcester, probably for shopping, entertainment, and sightseeing, thus testifying further to Worcester's power of attraction.

The other road services and the railways too may be taken to have carried among their passengers a considerable proportion of shoppers, particularly if the 1939 figures are used so as to give a picture of normal conditions unaffected by workers travelling to war factories or aerodromes. Most of the cheap daily and other return tickets on the railways were probably taken largely for shopping. There was evidence of considerable traffic of this type to Worcester, including traffic from Bromyard over the Herefordshire border, and to a less degree from Ledbury, where the traffic was equally divided between Worcester and Hereford.

On the whole, the 1939 public bus and railway services were frequent from points north-west, west (including parts of Herefordshire), south-west, and along the main Malvern–Birmingham route, but did not provide equal facilities from east or south-east. Apart from slightly increased services from Pershore, there was little extra Saturday service especially for shopping (and entertainment) from this region, and there is no railway line direct from the east into Worcester. This district, however, has a scattered population of low density.

On the whole the weight and direction of shopping traffic into Worcester attests to the attraction and necessity of the City's shopping facilities to a widely distributed outlying population.

(*b*) *Provision of Efficient Transport Services, Convenient Road Access, etc.*

Questions relating to public transport and road access are considered fully in the chapter on Transport, and a summary of these services, in so far as they can be allocated to shoppers, has been given above to illustrate the attraction of Worcester's shopping centre and the service which it renders to the surrounding districts.

An item of importance to would-be shoppers is the accessibility of the shops, often hindered by congestion caused by through traffic, standing delivery vehicles, the unloading of goods across pavements, and the parking of private cars. Information showing the extent of these problems, illustrated by the amount of traffic passing through Worcester's main streets, and maps showing the incidence of road accidents (Figs. 21 and 22—see also 51–4 and 89–91) is included in the chapter on Transport, where also recommendations are put forward for their solution. The following outstanding points were brought out:

1. There is much heavy through traffic which could be diverted from the main streets by means of peripheral roads.
2. Unloading is not confined to the rear of shops, but causes congestion to main shopping streets.
3. Car-parking provision is inconvenient; the consequent use of the main streets for parking often causes congestion.

(*c*) *Restaurants, Catering Facilities, etc.*

In surveying the importance of catering facilities from the point of view of a good shopping centre, the needs only of City residents and daily visitors are here considered. Whether Worcester could develop as a resort attracting not only daily visitors but visitors staying for longer periods (a development which would certainly call for greatly improved hotel facilities and for extra shops of the luxury and service class of trades) is discussed in Chap. VIII. The total number of catering establishments including hotels and public houses, at present existing in Worcester is shown in Table II. In the centre of the City, apart from four hotels which normally provide non-residents with midday and evening meals, there are, as can be seen from Table II, ten cafés and teashops (excluding two cinema cafés) to cater for those requiring meals away from home. These facilities were in wartime supplemented by two British Restaurants. In addition, snacks are served at four milk bars and at the snack bars of the two variety chain stores. The location of all public houses, cafés, fish-and-chip shops, and milk bars is shown in Fig. 39, Chap. XI. In wartime these facilities were quite inadequate to deal with the demand. Although the wartime picture can obviously not give a true indication of the normal state of affairs, catering standards in Worcester in peacetime did not in any way compare with those in centres like Oxford. In 1935 Oxford had as many as 69 premises which were classified as Restaurants, serving not only a large number of visitors, but also an abnormal population resident in the colleges.

(*d*) *Price Levels*

It was found impossible in wartime to obtain any statistical information about price levels as they existed under normal conditions. From various sources, however, it was possible to deduce that the general price level in Worcester bears comparison with that of other towns. Prices appeared slightly lower than in Cheltenham, about the same as in Gloucester, and compared quite well with those in Birmingham. For certain commodities prices were higher than in Birmingham, and for other things lower. For instance, women's clothes tended to be slightly higher, but the boot and shoe trade and all ironware shops had comparatively low prices, selling the type of goods which could be purchased by the surrounding agricultural population. In the furnishing trade, Worcester had three types of shop; first, the exclusive type which catered for the County clientele with high prices; secondly, the hire-purchase type of shop (moderate prices); and thirdly, the small cash sales shop with cheap furniture. Antique furniture to cater chiefly for visitors falls into the first category. Food tended to be cheaper in Worcester than in towns with less convenient access to the areas in which the food is grown.

In the suburbs the prices tended to be slightly higher than in the centre of the City. Suburban shops would sometimes buy from the larger shops in the centre at a small discount and sell at a slightly higher price in order to get sufficient profit. The characteristics of suburban shopping, which are so distinct from those of central district shopping, are considered in detail in § 2.

§ 2. SHOPPING FACILITIES WITHIN THE CITY SUBURBS

For the purpose of analysing the shopping facilities within the suburbs of Worcester, the five major Areas have been used which form a basis of analysis throughout the Survey.*

Before examining the distribution of the number of shops over these

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**Note*. Definition of Areas within the City.

Whenever it has been necessary to consider parts of the City separately, the City has been divided into five Standard 'Major Areas' as follows:

1. Central Area
   Sub-divided further, for purposes of the shopping survey, into 1A and 1B. The former is the area taken as the Central Shopping Area, and is indicated in Fig. 28 by the block of red. The remainder, 1B, is *sub-central.*
2. St. John's
3. Barbourne and Claines
4. Rainbow Hill and Tolladine
5. Spring Hill, Cherry Orchard and London Road.

The extent of these Areas and their boundaries are clearly shown on the street map (Fig. 100) and in Fig. 28.

five major Areas, it was necessary to regroup the trade categories into a form more appropriate to the characteristics of suburban shopping. The headings taken were:

1. NECESSITIES
   (*a*) Frequent wants
   (*b*) Periodic wants
2. COMMON REQUIREMENTS
3. LUXURY AND SPECIALITY GOODS
4. SERVICES
5. RESTAURANTS, CATERING, ETC.

These headings appear on Tables VI and VII. Trades included in these tables are only those represented in the suburbs, so that not all the trade categories in Table I appear. In both these tables, as in Table II, we have again classified shops according to their main trade, and therefore the number of shops shown is not an indication of the number of outlets for the various commodities. In both tables the order of the various trades has been arranged within the categories according to the total number of shops of that trade throughout the suburbs.

(*a*) GENERAL STRUCTURE OF SHOPPING FACILITIES

Table II distinguished shops in the Sub-central and Suburban Areas, and showed that in the various retail trades very different proportions of all shops are found centralized. In some speciality trades, like furs, corsets, and optical supplies, *all* shops are in the Central Shopping Area; in other more varied and commonly demanded trades like outfitting, drapery, furniture, hardware, stationery, and jewellery, the *majority* of the shops are in the Central Shopping Area; in yet other trades the numbers are either about *equal* or the central shops are in a *minority*. Among these last-mentioned decentralized trades are (*a*) the general shops, (*b*) the daily-want food group (thus excepting luxury foods such as wines and spirits or fish, game, and poultry), (*c*) other daily or periodic requirements such as drugs and newspapers, (*d*) the repair and service trades such as decorating, cycle repair, garage service, shoe repair, and hairdressing, and (*e*) the delivery trades, such as coal.

These decentralized shops may be found either in a suburban shopping centre or dispersed; and the total of 736 shops found in Sub-central and Suburban Areas according to Table II have, in Table VI, been divided between those which are within the 'suburban shopping centres' and the dispersed shops. The term 'suburban shopping centre' relates to a definite area where shops are *grouped together*—usually at convenient points of access, i.e. on main bus routes; the remaining shops, which are scattered throughout the suburbs, are described as 'dispersed.'

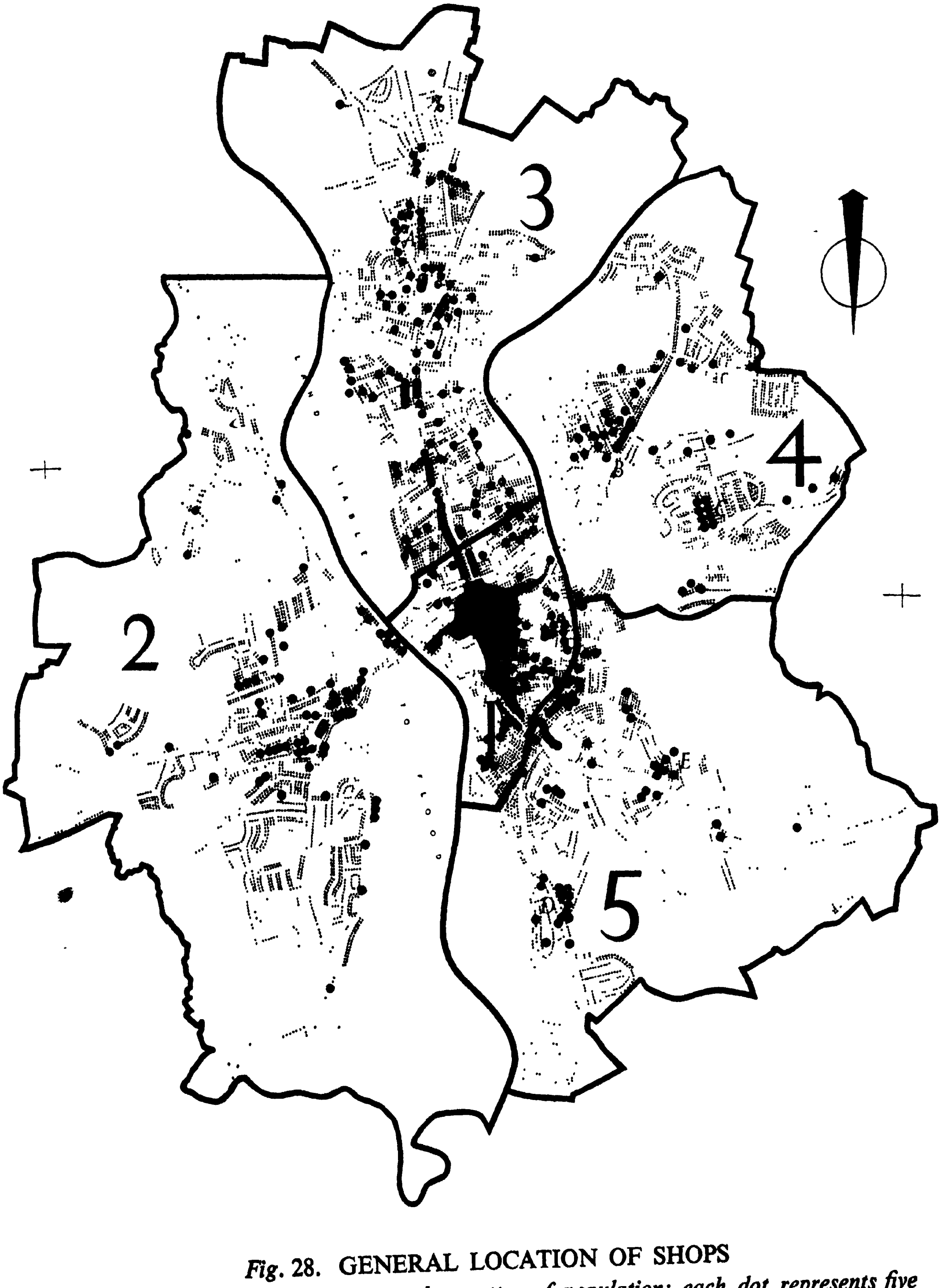

Fig. 28. GENERAL LOCATION OF SHOPS

On background of dots to represent the scatter of population; each dot represents five persons. The main shopping centre is shown by the block of red in Area 1; shops elsewhere by a red dot. Suburban shopping centres stretch along main roads north into Area 3, east toward Area 4, south into Area 5. Across the river (Area 2) there is another centre and the sites of embryo centres are marked at A, B, C, D, and E. Centres and embryo centres are named in Chap. XI, §4.

TABLE VI

ANALYSIS OF SUBURBAN RETAIL SHOPS INTO SUBURBAN CENTRED OR DISPERSED

Arranged within their Categories according to Numerical Importance

Category	Suburban Centre shops	Dispersed shops	Total suburban shops
1. NECESSITIES			
(*a*) *Frequent Wants*			
General shops	7	180	
Grocery and Provisions	19	24	
Meat	19	18	
Greengrocery, fruit, and flowers	17	13	
Bread and cakes, etc.	8	13	
Newspapers and books	9	12	
Confectionery (sugar)	12	6	
Tobacco	7	5	
Milk and dairy produce	1	8	
SUB-TOTAL 1(*a*)	99	279	378
(*b*) *Periodic Wants*			
Drapery and haberdashery	9	4	
Drugs and medicinal goods	5	5	
Coal	6	4	
SUB-TOTAL 1(*b*)	20	13	33
2. COMMON REQUIREMENTS			
General outfitting	8	2	
Jewellery and silverware (including watch repair)	5	1	
Stationery (including circulating library)	3	3	
Hardware and household goods (including agricultural implements)	4	1	
Second-hand shops	3	1	
Corn, seed and dog foods	3	—	
Wool and art needlework	2	—	
Boots and shoes	1	—	
SUB-TOTAL 2	29	8	37
3. LUXURY AND SPECIALITY GOODS			
Antiques	4	1	
Fancy goods, picture frames, etc.	1	—	
Gloves, hosiery, and leather goods	2	—	
Fish, game, and poultry	2	—	
Furniture and soft furnishing	1	—	
Music	1	—	
Wines and spirits	—	1	
Millinery	1	—	
SUB-TOTAL 3	12	2	14
4. SERVICES			
Hairdressing	18	14	
Garages and petrol	9	22	
Decorating, plumbing, etc.	2	28	
Shoe repairing	6	12	
Cycle repairing	4	5	
Electrical, gas and radio engineer	5	2	
Funeral furnisher (including undertaker)	4	3	
Photographer	3	1	
Monumental mason	—	3	
Laundry and dry-cleaning	1	1	
SUB-TOTAL 4	52	91	143
5. RESTAURANTS, CATERING, ETC.			
Public houses	18	74	
Fish-and-chip shops	5	18	
Cafés and teashops	4	4	
Hotels	2	3	
Unlicensed catering	3	—	
SUB-TOTAL 5	32	99	131
GRAND TOTAL	244	492	736

Table VI shows that much the same logic which differentiates retail trades into centralized and decentralized also differentiates the decentralized trades into 'grouped' and 'dispersed.' In Table VI, indeed, this logic is admitted in the classification into five categories according to the degree of necessity as set out at the beginning of this section.*

Within the suburban shopping centre all categories of decentralized shops are found. A mixed group of shops may be regarded as the nucleus of a general neighbourhood centre; the Retailers' Advisory Committee on Town Planning, indeed, regard such a grouping as fundamental to convenience and a friendly and lively atmosphere. The shops dispersed within the suburbs, however, belong almost exclusively to the Food and other daily wants (1(*a*)), to the Service and Repair (4), and to the Catering (5) categories. Particularly dispersed compared with the numbers in suburban centres are: Within Category 1(*a*), general shops; within Category 4, garages, shoe repairing, and decorating; and within Category 5, public houses and fish-and-chip shops.

For practical purposes of siting shops, whether dispersed or centralized, further details must be supplied as to the precise goods or services included in each heading.

1. NECESSITIES. (*a*) *Frequent Wants.* These are the commodities which are often called 'convenience goods,' e.g. bought hand-to-mouth for urgent use. They are usually of small unit value, purchased frequently, and at the most accessible shop. It can be seen from Table VI that the majority of the trades falling within this category are those supplying food. In most cases, the importance of personal choice is secondary to that of convenient access. Confectionery and tobacco, which in the normal way would not be considered necessities, have been included because frequent small-value purchases are made, and the commodities are to a large extent conventional necessaries.

The largest number of shops within this or any category are the General Shops (a typical example is given in Fig. 85).† These shops supply, to a limited extent, the majority of commodities falling under this heading of Frequent Wants, and are usually capable of at least meeting an urgent need where the demand is for a commodity in common or daily use and is not for any particular brand, size, or quality. Obviously, however, the general shop cannot hope to cater for all the daily requirements of the consumer in the way of food, and consequently shops specializing in grocery, meat, greengrocery, bread, and cake confectionery, etc., are to be found high on the list.

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*This classification is similar to that used in Table I; but modified to fit facts different from those of the Central Shopping Area where special attention was paid to the luxury goods. Chemists, tobacconists, and sugar confectioners are classified in Table VI under Group I (Necessities), as the shops in this case are small and designed to meet the common and daily requirements of the local inhabitants; but in the larger shopping centre, shops in these trades sell a high proportion of the more expensive and specialized varieties, which warranted their inclusion under Groups III and IV in Table I. Further reclassification imposed by the facts (and significant for that very reason) was due to the factor of common requirement, which tends to concentrate shops in suburban centres.

†This raises the question whether there are not too many equally accessible shops each, owing to competition, with too low a turnover to be either profitable or efficient. See Cadbury Bros., *Industrial Record*, pp. 41–59 with maps of shops in Hull and Leicester.

The numbers of tobacconists and shops supplying sugar confectionery can really be combined, as in most cases both kinds of trade are carried on at once. Added, they are comparatively numerous and would be high on the list, but it should be borne in mind that they are usually the smaller type of shop, whereas the grocery and provision shops tend to be larger and to combine the sale of other commodities, such as greengrocery, with their own trade.

In the case of milk and dairy produce, the numbers here really refer to dairies, and since milk is delivered it is not so essential to have these near at hand; one would, however, naturally expect to find dairies in the suburbs, to act as a convenient collecting and distribution point.

Newsagents and booksellers in the suburbs are not really bookshops, but are primarily newsagents, selling (as mentioned in the notes, pp. 197–8, dealing with classification of trades) the magazine and novelette type of book. They also carry on small lines of trade to meet casual demands for stationery and perhaps low-priced books and toys for children. This is the type of shop to which a sub-post office is often attached. The distribution of post offices is shown in Fig. 38.

(*b*) *Periodic Wants.* Into this category fall those necessities for which the demand is a frequent, but not a daily one. Within this group, as in 1(*a*), the commodities tend to be of the standardized type, and the need can be met by a comparatively small shop not offering too wide a choice.

The location of coal dealers in relation to housing is, like that of dairies, comparatively unimportant to the consumer, but coal depots naturally tend to be placed at the point of distribution most convenient to them, e.g. at canal wharves or near railway stations.

2. COMMON REQUIREMENTS—less frequently wanted per person, but wanted by nearly all. Shops must offer a wider variety, as the element of personal choice is more important. Since demand for these commodities is not so urgent or frequent, the consumer does not need to have the shops selling these requirements so near, but at the same time there is a sufficiently universal demand for such commodities to support shops of this type in a suburban shopping centre.

General Outfitting is used to cover outfitters of all types, and is thus first within the group in number of shops. Second comes jewellery and silverware unexpectedly numerous and dispersed explained by the fact that the majority of shops under this heading are the small watchmaker and jeweller type.

Shops included under Stationery are the type which can supply all common requirements beyond the daily newspaper. They do not meet specialized demands by business firms, offices, etc. Included under this heading is one shop which operates solely as a circulating library, as it is often found that shops in the Stationery group run a library as a side-line. In addition, however, libraries do occur in conjunction with other shops in Category 1, and this is a tendency which would be expected, as book-borrowing is a periodic want. The distribution of public libraries appears in Fig. 40.

3. LUXURY AND SPECIALITY GOODS. The trades coming under Category 3 are those which normally concentrate in a *main* shopping centre. The list here by no means comprises all the luxury retail trades, but includes merely those which for one reason or another are found situated in one of the suburban centres. In this category certain trades are also included by virtue of infrequent demand for their commodities, e.g. furniture, etc. Consequently, shops coming under this group tend to be fewer and, normally, of a larger type than would be found in the suburbs.

Fish, game, and poultry is included here as a luxury, as this only includes the high-class type of shop selling these commodities. In the suburbs, the ordinary demand for fish is met mainly by fish-and-chip shops selling wet fish during the day.

4. SERVICES. The services which seem most frequently in demand by householders are garage service, hairdressing, shoe repairing, and cycle repairing, and these are numerous and dispersed. Cycle repairing appears considerably less frequently than the other three mentioned, but this is because the same service is often performed by a garage.

As mentioned earlier in this chapter, decorators, plumbers, etc., are found to be numerous in the suburbs, because they find it convenient to locate their yards and premises there; but the services of such trades, and of electrical, gas, and radio engineers, are not mainly performed at the shop and the shop need not be near the customer so long as demands for service can be met promptly and easily. Other services of a like nature are those of chimney sweeps, window cleaners, etc., but it was not possible to obtain reliable statistical information about the numbers engaged.

5. RESTAURANTS, CATERING, ETC. The dispersed premises within this category are clearly shown to be public houses and fish-and-chip shops, because the demand for these has been widely developed (see Fig. 39). In counting hotels, the same policy has been adopted as for Table II, i.e. temperance and private hotels and boarding-houses have been excluded.

(*b*) THE NUMBERS AND TYPES OF SHOPS WITHIN THE DEFINED AREAS

For practical planning, the distribution and adequacy of shops must now be considered within each of the five Areas separately. In Table VII the 736 suburban shops in Worcester, classified in the same way as in Table VI, have been divided up to show their distribution over the five major Areas.

AREA 1B (SUB-CENTRAL). This Area, as explained in the note on page 205, represents Central Area 1, excluding the Central Shopping Area shown as a red block in Fig. 28.

The Area is well served for all trades having dispersed shops, with the exception of a chemist, but this deficiency and any others occurring in the trades under Category 2 is explained by the fact that the Central Shopping Area is, in the main, so easy of access. As the Area under review does not form an integrated whole, it provides no case for advocating the establishment of any particular shop to meet a deficiency.

Apart from the shops in Lowesmoor, which may be classed as a suburban shopping centre, there are only three shops within the Area which are not of dispersed type: an outfitter, an antique dealer, and an ironmonger.

The housing density in this Area is high. Such shops as do exist within it are thus all near at hand, and the problem of efficient transport service does not arise.

AREA 2 (ST. JOHN'S). This Area has very different characteristics from the other Areas under consideration, as it is more self-contained and lies apart from the rest of the town on the western side of the Severn. It has a definite shopping centre, i.e. St. John's and the Bull Ring, which has to cater for the needs of a somewhat scattered population.

With the exception of the shops in St. John's and the Bull Ring, all but two of the shops in the scattered districts of this Area fall within our basic Necessities group, and amongst these there are none which would even come under Category 1(*b*)—Periodic Necessities. It follows that in order to satisfy needs coming under this group of trades (or any other of their common requirements), people must travel either into the St. John's shopping centre or to the Central Shopping Area of the City. Some indication of the facilities provided by the St. John's Centre can be seen in the variety of shops shown on Table VII for Area 2.

Questioned on shopping visits to the suburban shopping centre of St. John's, householders in outlying districts made many complaints about the inadequacy of bus services, but it was found that they arose mainly from the restrictions imposed by war conditions.

TABLE VII

DISTRIBUTION OF RETAIL SHOPS AMONG THE SUB-CENTRAL AND SUBURBAN AREAS

Arranged within their Categories according to Numerical Importance

Classification	Areas*					Totals
	1B	2	3	4	5	
1. NECESSITIES						
(a) Frequent Wants						
General shops	43	33	59	26	26	187
Grocery and provisions	8	7	17	3	8	43
Meat	6	8	10	6	7	37
Greengrocery, fruit, and flowers	6	8	12	3	1	30
Bread and cakes, etc.	6	2	11	1	1	21
Newspapers and books	5	4	6	2	4	21
Confectionery (sugar)	4	4	7	—	3	18
Tobacco	3	2	4	—	3	12
Milk and dairy produce	1	2	2	3	1	9
						378
(b) Periodic Wants						
Drapery and haberdashery	3	3	3	1	3	13
Drugs and medicinal goods	—	2	4	2	2	10
Coal	6	1	—	1	2	10
						33
2. COMMON REQUIREMENTS						
General Outfitting	3	1	5	1	—	10
Jewellery and silverware (including watch repair)	2	2	—	1	1	6
Stationery (including circulating library)	1	2	2	—	1	6
Hardware and household goods (including Agricultural implements)	3	2	—	—	—	5
Second-hand shops	—	—	—	—	4	4
Corn, seed, and dog foods	—	2	1	—	—	3
Wool and art needlework	—	1	1	—	—	2
Boots and shoes	—	—	1	—	—	1
						37
3. LUXURY AND SPECIALITY GOODS						
Antiques	1	1	3	—	—	5
Gloves, hosiery, and leather goods	1	—	1	—	—	2
Fish, game, and poultry	—	1	1	—	—	2
Furniture and soft furnishing	1	—	—	—	—	1
Music	—	—	1	—	—	1
Wines and spirits	—	—	—	1	—	1
Millinery	—	1	—	—	—	1
Fancy goods, picture frames, etc.	—	—	1	—	—	1
						14
4. SERVICES						
Hairdressing	9	7	9	2	5	32
Garages and petrol	5	7	12	2	5	31
Decorating, plumbing, etc.	5	5	11	4	5	30
Shoe repairing	3	4	6	1	4	18
Cycle repairing	1	2	5	—	1	9
Electrical, gas, and radio engineer	—	1	5	—	1	7
Funeral furnisher	2	3	2	—	—	7
Photographer	—	—	3	—	1	4
Monumental mason	—	2	1	—	—	3
Laundry and dry-cleaning	—	—	2	—	—	2
						143
5. RESTAURANTS, CATERING, ETC.						
Public houses	24	19	24	6	19	92
Fish-and-chip shops	5	4	5	3	6	23
Cafés and teashops	3	2	1	—	2	8
Hotels†	2	—	2	—	1	5
Unlicensed catering (milk bars, etc.)	—	2	1	—	—	3
						131
TOTALS	162	147	241	69	117	736

*See note on p. 205. †See footnote to Table II.

When discussing the transport facilities in this Area, people from the outlying districts (who have to get a bus in any case to bring them into St. John's shopping centre) said they often remained on the bus and went right through into the main shopping centre in Worcester itself. This practice is important in considering plans for shopping sub-centres.

AREA 3 (BARBOURNE AND CLAINES). Here the Barbourne Road and Tything, from Castle Street to the junction of the Ombersley and Droitwich Roads, constitute the Suburban Shopping Centre or 'stretch,' as shops have settled along the main road leading north from the City. This centre provides a considerable number and variety of shops, 101 shops against 60 at St. John's centre, whereas, as shown in Table VIII, the population of the district is only approximately 16% higher.

Here again, all shops lying outside the Suburban Shopping Centre fall into the category of trade of dispersed pattern. Under the heading 1B there is only one shop, namely a chemist; but in addition some of the dispersed shops carried on side-lines in the sale of commodities coming under Category 2, e.g. corn and seed, stationery, etc., and there were also certain shops with circulating libraries attached.

No complaints were registered about bus services in this area, but, as can be seen from Fig. 20, though the frequency is high, the routes follow the main roads only.

AREA 4 (RAINBOW HILL AND TOLLADINE). There is no real suburban shopping centre in this Area, although there would appear to be two nuclei, i.e. (1) an older one in Astwood Road near Tunnel Hill (which includes all the shops coming under Category 1(*b*)) and also a jeweller and watch repairer, and a wine and spirit merchant; and (2) a new centre which has been opened to serve the new housing development around Rose Hill, comprising eight shops (one of which was unopened), all coming under category of trade of dispersed pattern (with the exception of an outfitter). Thus, although the shops have tended to congregate together, they are merely meeting basic necessities and cannot be said to form a shopping centre in the sense in which we have defined the term.

Table VIII shows that this Area is very badly served generally for shops, and Lowesmoor (in Area IB) probably has to serve as a suburban shopping centre for many of the inhabitants of the Area.

There were complaints from householders all along the bus route (see Fig. 20) in this Area, i.e. from Tunnel Hill and Tolladine Road, and from the new housing districts around Rose Avenue. The bus service there had been increased to a fifteen-minute schedule, but it was still not adequate, and many complaints arose through long waits due to overcrowding. There was no bus serving Newtown Road, so that shoppers from that area tended to increase still further the number requiring to travel on the Tolladine route.

AREA 5 (SPRING HILL, CHERRY ORCHARD, AND LONDON ROAD). The shopping centre or 'stretch' in this Area comprises those shops which extend down Sidbury beyond the main Central Shopping Area, i.e. between the Canal and Bath Road. The majority of shops in the Area are rather old premises and mostly of the smaller type. The existence of four second-hand shops gives some indication of the rather poor standard of facilities offered, and in all there are only twenty-seven retail premises in this part of the Area.

An embryo centre is to be found down the Bath Road; this comprises a general shop, a butcher, a chemist, and a radio dealer, while at intervals along this road general shops cater for the daily needs. There is also a collection of six shops forming a group (but all coming into the category of trade of dispersed pattern) along the London Road.

There were a few complaints about the adequacy of the bus services in this Area, but they were again the result of wartime restrictions. Bus routes (see Fig. 20), cover the district fairly well.

(*c*) A COMPARISON BETWEEN AREAS IN SHOPPING FACILITIES AND RECENT DEVELOPMENTS

The numbers and types of shops, both scattered and grouped in suburban shopping centres, have been considered Area by Area. It remains to contrast the shopping facilities of these five Areas, bearing in mind the needs of the population to be served and the increasing demands of suburban development. Our conclusions, based on statistical information, are supported by general comments from the house-to-house survey.

The total number of shops varies considerably as between Areas (see Table VII). But mere number of shops, considered within our arbitrarily defined Areas, do not of themselves give a truly comparative picture of the facilities available. Other factors to be borne in mind are the size of the population within the area to be served—determining the frequency of demand for goods in common use; accessibility to the main shopping centre; the number of shops within the suburban shopping centre, and the number dispersed; and the location of both types in relation to where the population lives.

Table VIII compares the number of shops in each Area with the estimated* population (1944), and on this basis the number of persons to each shop has been worked out. According to this test, Tolladine is outstanding with by far the highest population per shop—twice as great as that for St. John's (Area 2) and Spring Hill, etc. (Area 5), and nearly three times that of both Sub-central (Area 1B) and Barbourne and Claines (Area 3).

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*Total for City (60,883) estimated by Local Food Office. Population by areas, adding up to this total, our own estimate.

TABLE VIII

COMPARATIVE ANALYSIS OF POPULATIONS AND NUMBERS OF SHOPS WITHIN THE SUBURBAN AREAS

Areas*	Estimated population, 1944†	SHOPS			Population per shop
		Sub-centre	Dis-persed	Total	
1B Sub-central area ..	8,621‡	55	107	162	53
2. St. John's	12,950	61	86	147	88
3. Barbourne and Claines	15,583	101	140	241	65
4. Rainbow Hill and Tolladine	12,591	—	69	69	182
5. Spring Hill, Cherry Orchard, and London Road	11,138	27	90	117	95
TOTALS ..	60,883	244	492	736	Av. 83

*See note on p. 205.

†See footnote to text, p. 215.

‡Refers to the resident population of the whole Central Area, i.e. Districts 1A and 1B, whereas the number of shops excludes those within the Central Shopping Area.

This method has been adopted, as the population within the Central Shopping Area is not sufficiently great to make any appreciable difference to the results. It enables us to show a correct total population for the whole city.

Shoppers living within the Sub-central Area appear to be the best served of all. At first sight this would seem strange, since they are so near the centre of the City. As mentioned earlier, however, the majority of the shops are concentrated in Lowesmoor, and the comparatively large number of shops per population of the district seems to indicate that it serves as a suburban shopping centre for some of the inhabitants of Area 4. This Area has no real shopping sub-centre of its own, and only 69 suburban shops cater here for the necessities and common requirements of approximately 12,600 people.

The total number of alterations and additions over the years 1923–39 for suburban areas were given in Table IV as:

New shop premises	100
Alterations	19
New garages	15
Alterations to garages	11

These totals are distributed over the five areas as shown in Table IX, and Fig. 29 shows for each area the relationship between these changes and those in the population over the same number of years. Since 1939 eight new shops have been opened in Tolladine. Fig. 24 (in Chap. VII) indicates the housing development which has taken place between 1919 and 1939. How ill this development is served by the location of shops can be judged by comparing Fig. 24 with Fig. 28.

TABLE IX

BUILDING OF NEW PREMISES OR ALTERATIONS TO EXISTING PREMISES WITHIN THE FIVE SUBURBAN AREAS DURING 1923–39

Area	New shops	Alterations to shops	New garages	Alterations to garages
1B Sub-central	8	1	2	7
2. St. John's	29	4	3	—
3. Barbourne and Claines . .	26	11	4	2
4. Rainbow Hill and Tolladine	20	—	4	—
5. Spring Hill, Cherry Orchard, and London Road . .	17	3	2	2
TOTALS . .	100	19	15	11

In general, the location of new shops has tended to follow the new housing development; there appears, however, to be a time-lag before shops are built to cater for the demand. Thus in ST. JOHN'S a few shops have been built along the Bromwich Road, but no shops occurred along the Malvern Road, as there is here a different type of residential area, with low density of housing. One or two new shops also have been built along the Bromyard Road and to the west of the Area. The total population increase in this area from 1923 to 1939 was approximately 3,000. In BARBOURNE AND CLAINES the new shops have mainly settled along the Ombersley Road, which is also the bus route out of the City, and to a less extent on the Cornmeadow Estate to supply the immediate requirements of the neighbourhood. In this area the net population increase has been small over the years 1923–39, for although there has been extension of housing to the north, this has partly been offset by clearance of areas nearer the centre of the City. To the south of Worcester, in AREA 5, the population as a whole has remained fairly constant; there has been a certain clearance from the centre of the City offset by small development

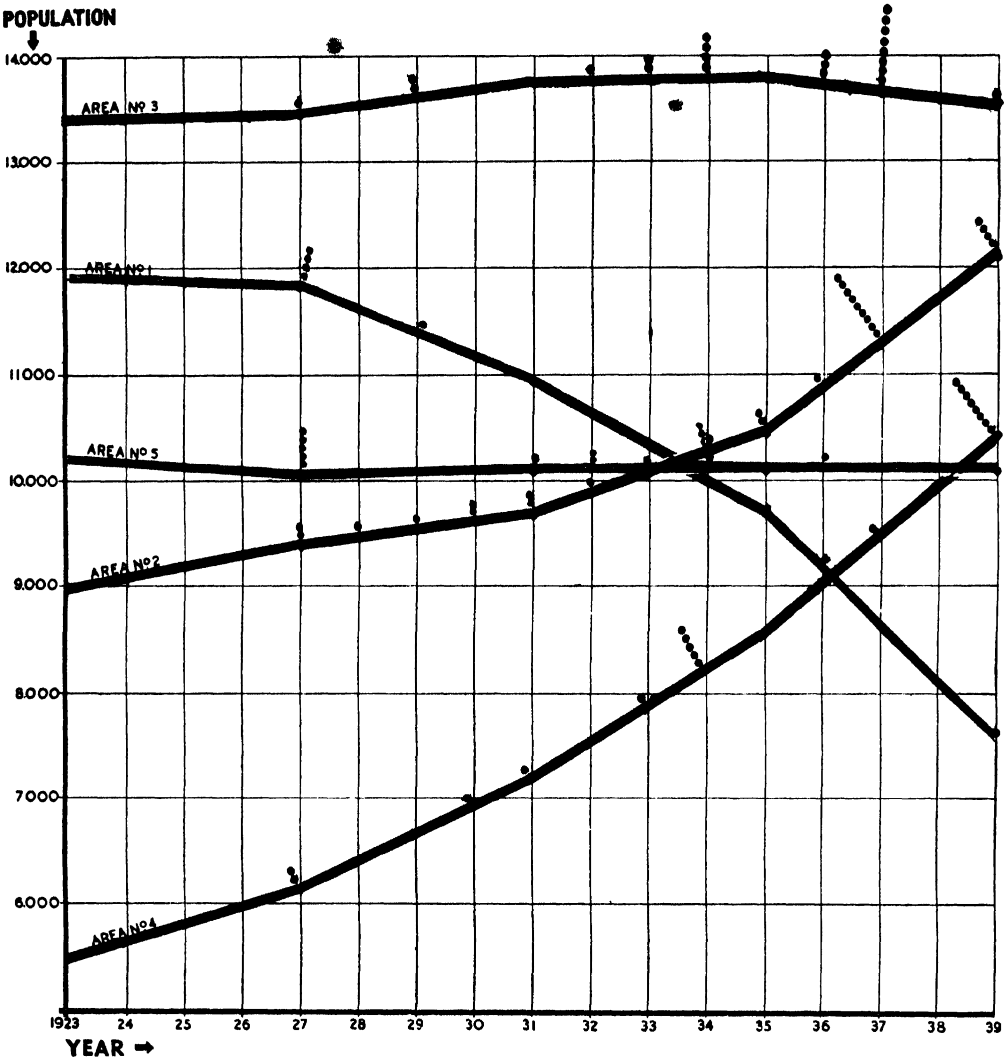

Fig. 29. POPULATION CHANGES AND NEW SHOPS IN THE FIVE AREAS (*see Fig.* 100) OF THE CITY (1923–39) along the Bath Road and Timberdine Avenue and the Spetchley Road. Nearly all the new shops within this area have settled along the Bath Road. The major part of the development in the TOLLADINE AREA occurred between 1934 and 1939—on the whole later than the development in other Areas, with the exception of parts of St. John's, and the Area has not yet caught up in shop numbers. Since 1939 the Avon and Teme Roads site south of Tolladine Road has been developed by the Ministry of Supply (see p. 140). The eight shops established near by in Rose Avenue were not opened before the outbreak of war, and consequently are not included in Table IX. This was a beginning which under normal conditions might have been followed up by further shops if the war had not caused restrictions. There is evidently a shortage of shops in this Area.

If we exclude from each Area consideration of the shops collected together within their suburban centres, we should still find that Tolladine compares unfavourably with the other Areas, for in these Areas we should have to relate the number of their dispersed shops to a population figure lower than that given in Table VIII. The reason for this is that in St. John's (Area 2), Barbourne and Claines (Area 3), and Spring Hill, etc. (Area 5), a certain proportion of the population lives very close to the shopping centre and does not require to be served by dispersed shops.

However, even though Areas 2, 3, and 5 are better served than Area 4 in the number of shops, it can be seen from Figs 30–35 (which indicate by shaded circles areas lying within a radius of a quarter of a mile of dispersed shops) that there are certain districts within those Areas which cannot get their essential daily requirements satisfied by shops within a quarter-mile distance.

(*d*) LOCATION ANALYSIS

Statistical tabulation of shops by defined Area is insufficient to demonstrate in detail the convenience of access of the available facilities. The major factor in determining this is their location in relation to houses and population.

It is a reasonable standard that the following needs should be capable of satisfaction within a quarter-mile distance of the home, so long as the population of the neighbourhood is sufficiently great to enable a shop to function in its minimum economic size:

1. General and grocers' shops,
2. Greengrocers,
3. Butchers,
4. Bread and cake confectioners,
5. Chemists.

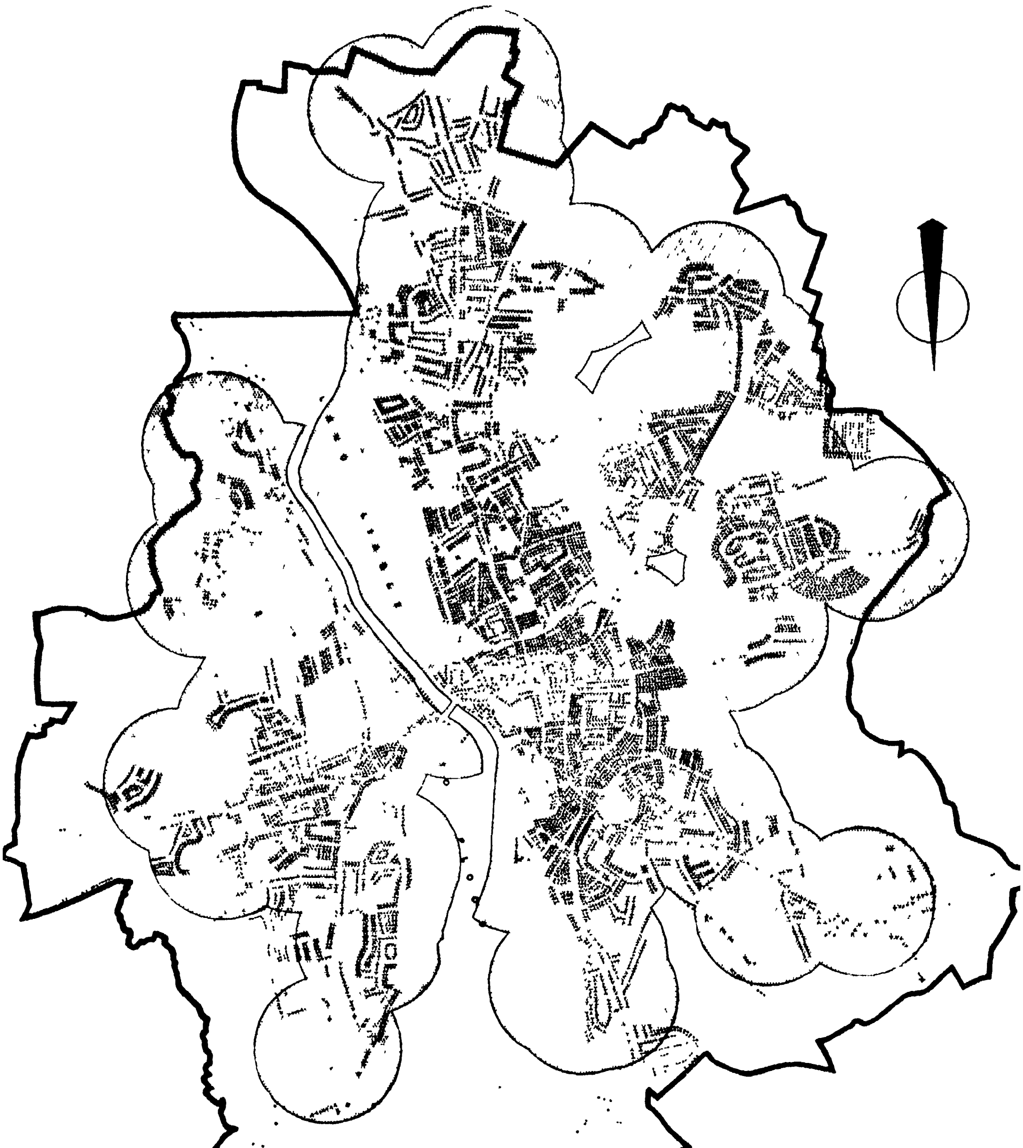

Fig. 30. DISPERSION OF SHOPS: ACCESSIBILITY OF GENERAL AND GROCER'S SHOPS

Each figure has a background of dots to represent the scatter of population: one dot represents five persons. Circles represent the area within a quarter of a mile of a shop.

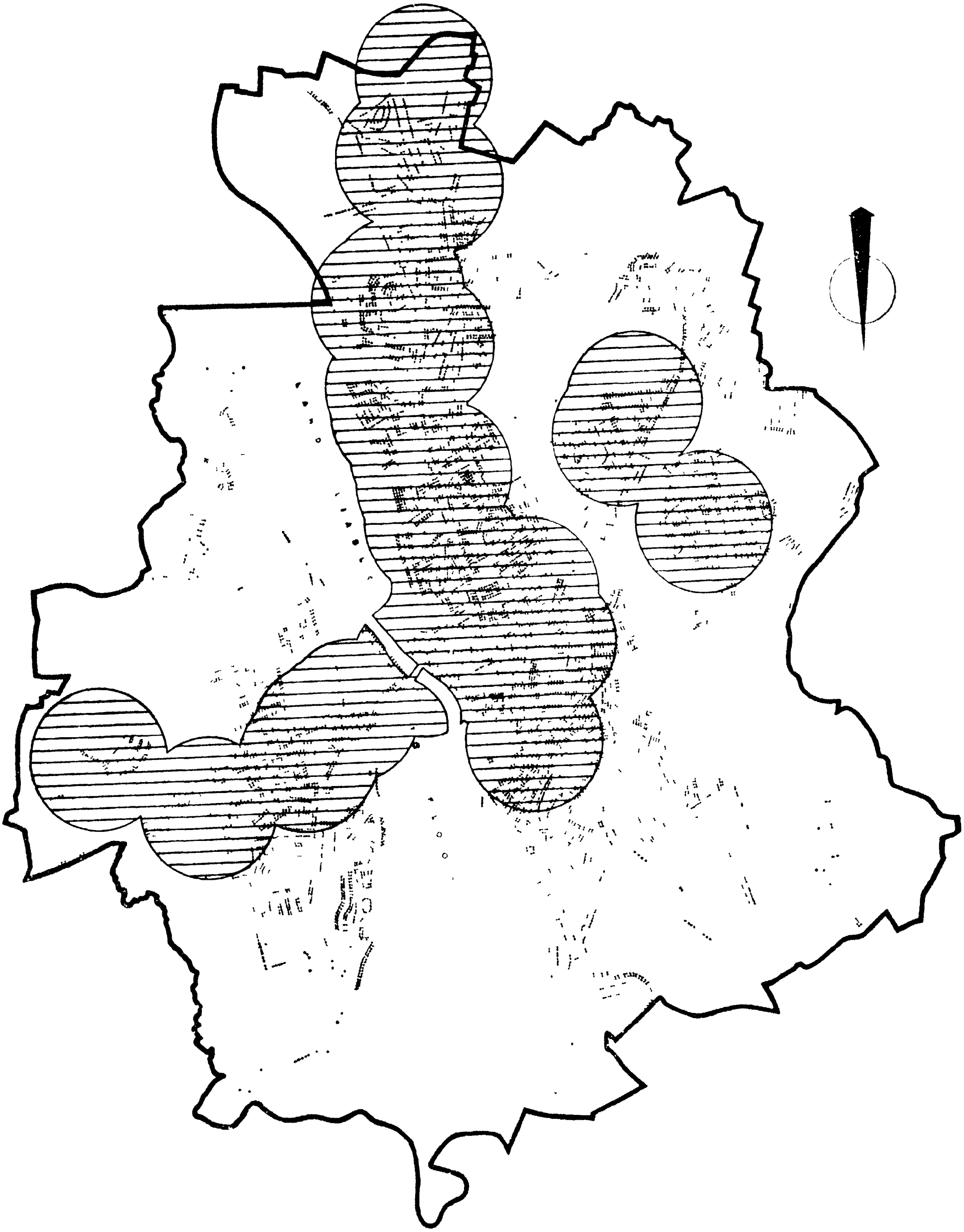

Fig. 31. DISPERSION OF SHOPS: ACCESSIBILITY OF GREENGROCERS
Each figure has a background of dots to represent the scatter of population: one dot represents five persons. Circles represent the area within a quarter of a mile of a shop.

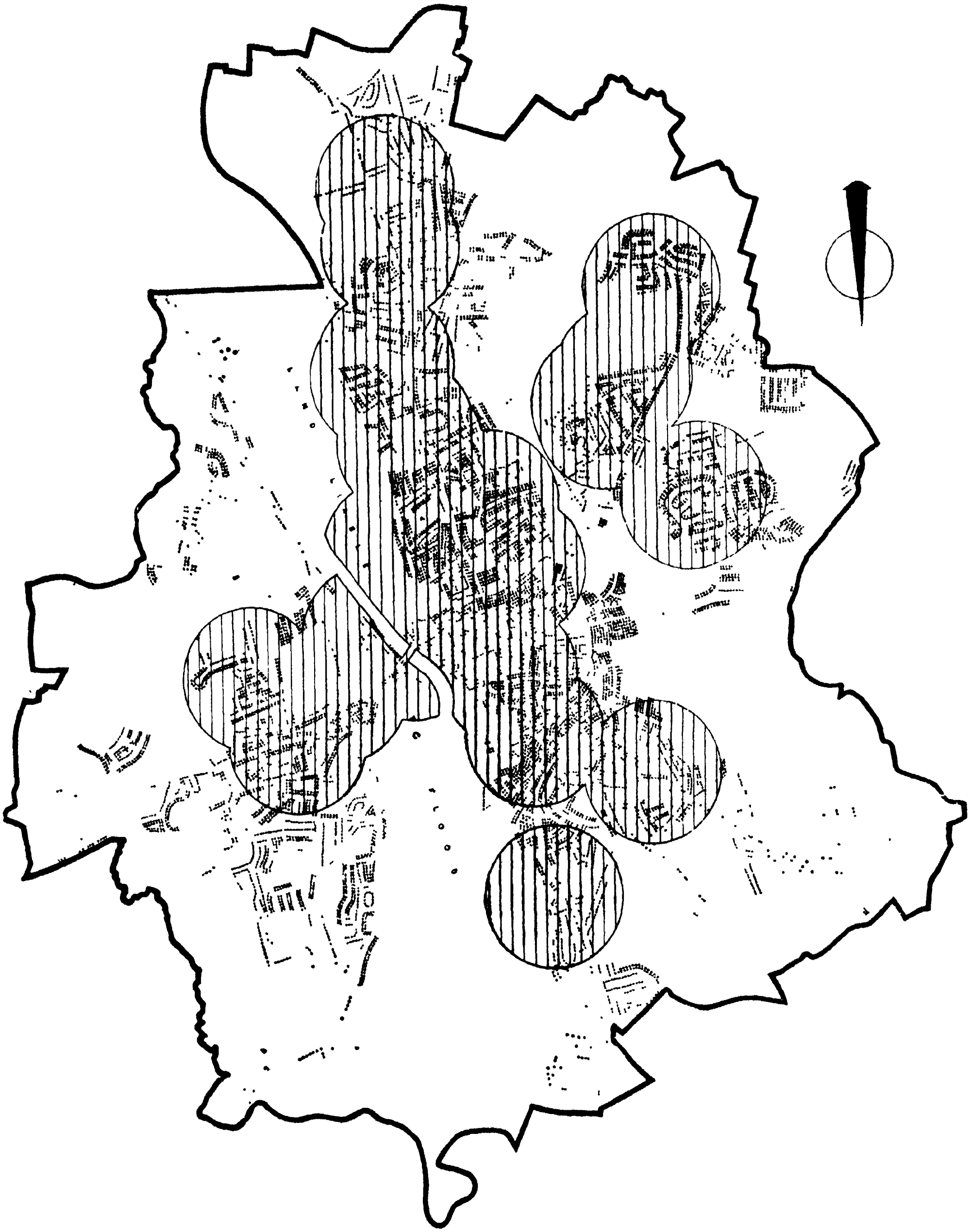

Fig. 32. DISPERSION OF SHOPS: ACCESSIBILITY OF BUTCHERS

Each figure has a background of dots to represent the scatter of population: one dot represents five persons. Circles represent the area within a quarter of a mile of a shop.

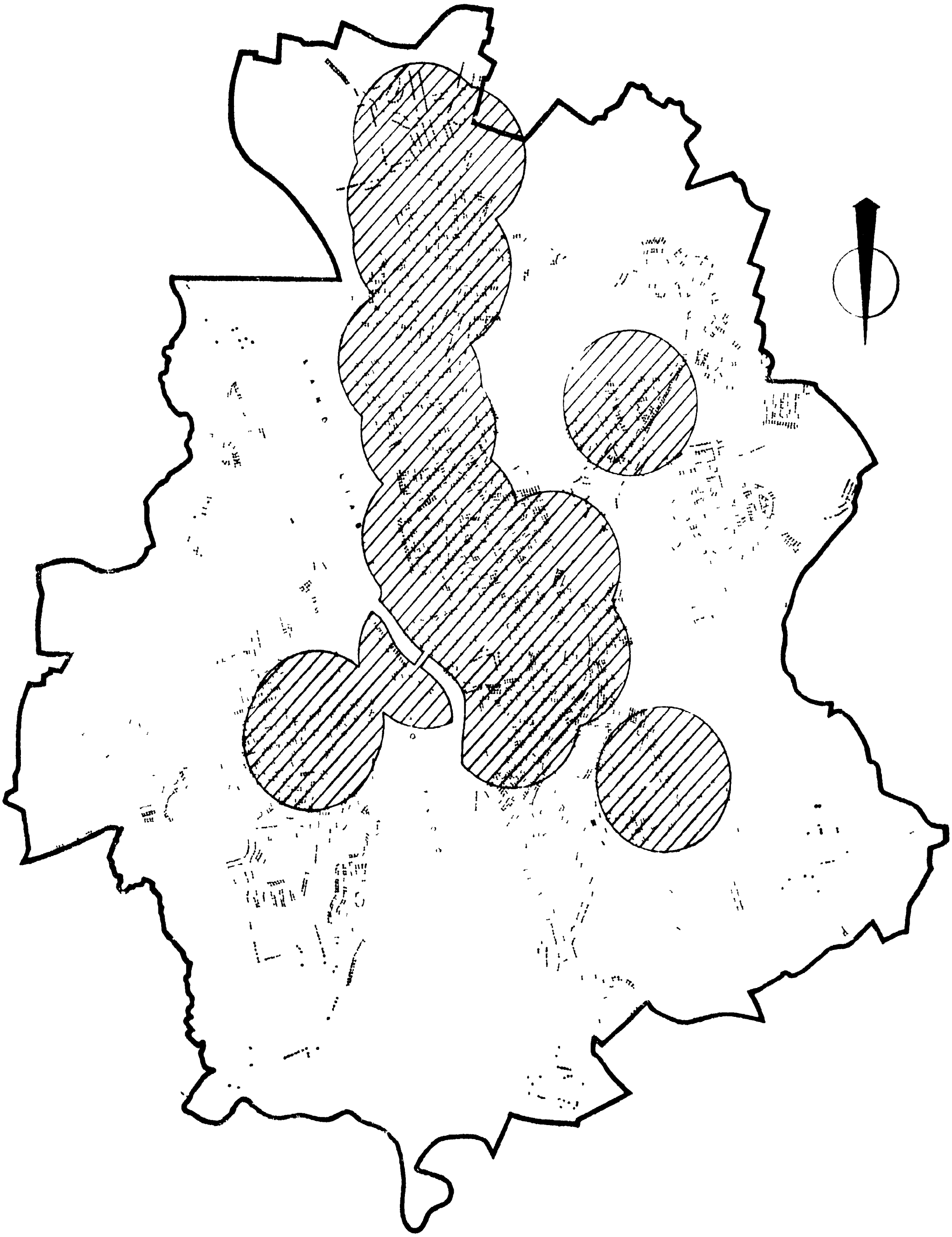

Fig. 33. DISPERSION OF SHOPS: ACCESSIBILITY OF BAKERS AND CAKE CONFECTIONERS

Each figure has a background of dots to represent the scatter of population: one dot represents five persons. Circles represent the area within a quarter of a mile of a shop.

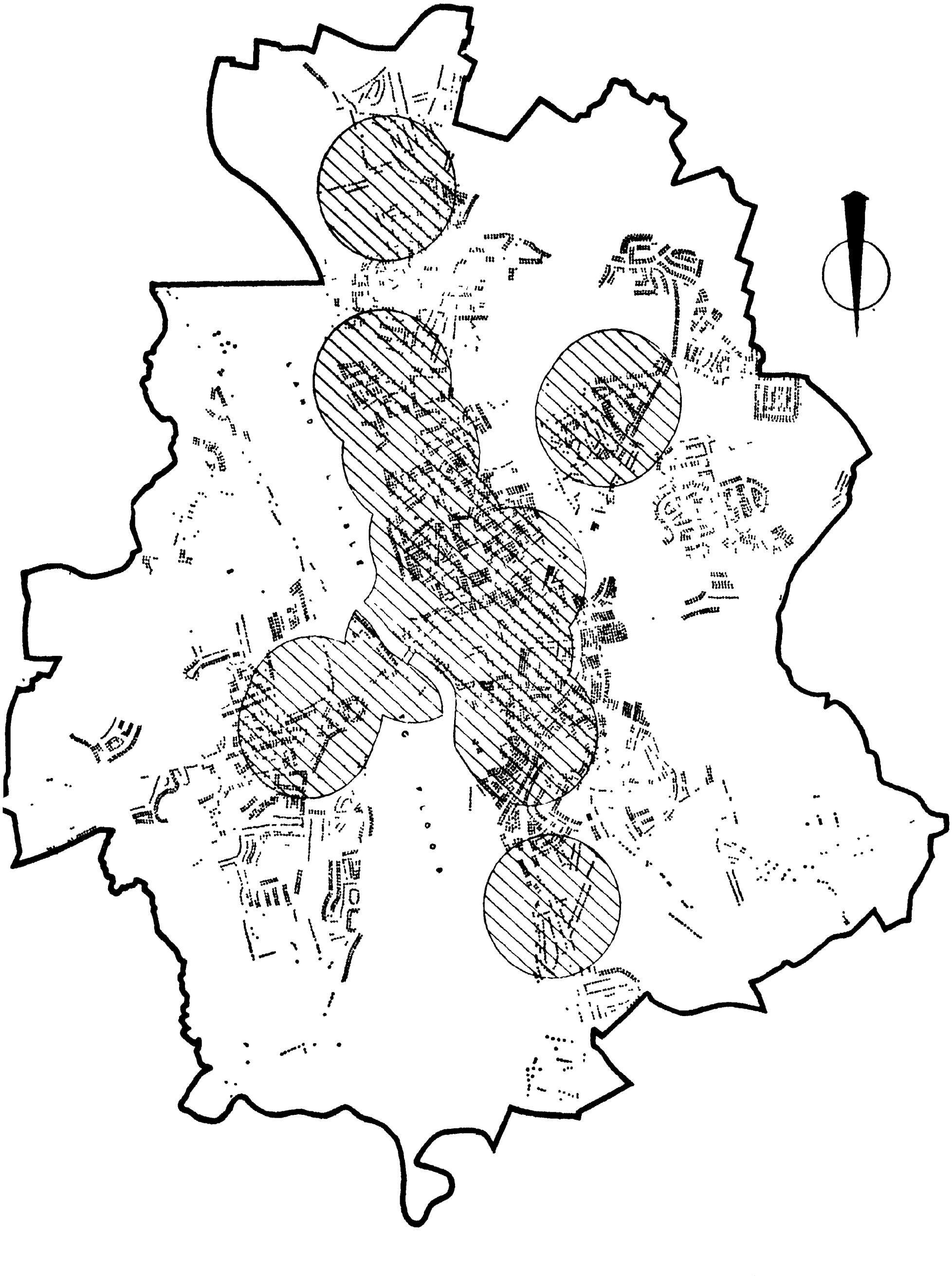

Fig. 34. DISPERSION OF SHOPS: ACCESSIBILITY OF CHEMISTS

Each figure has a background of dots to represent the scatter of population: one dot represents five persons. Circles represent the area within a quarter of a mile of a shop.

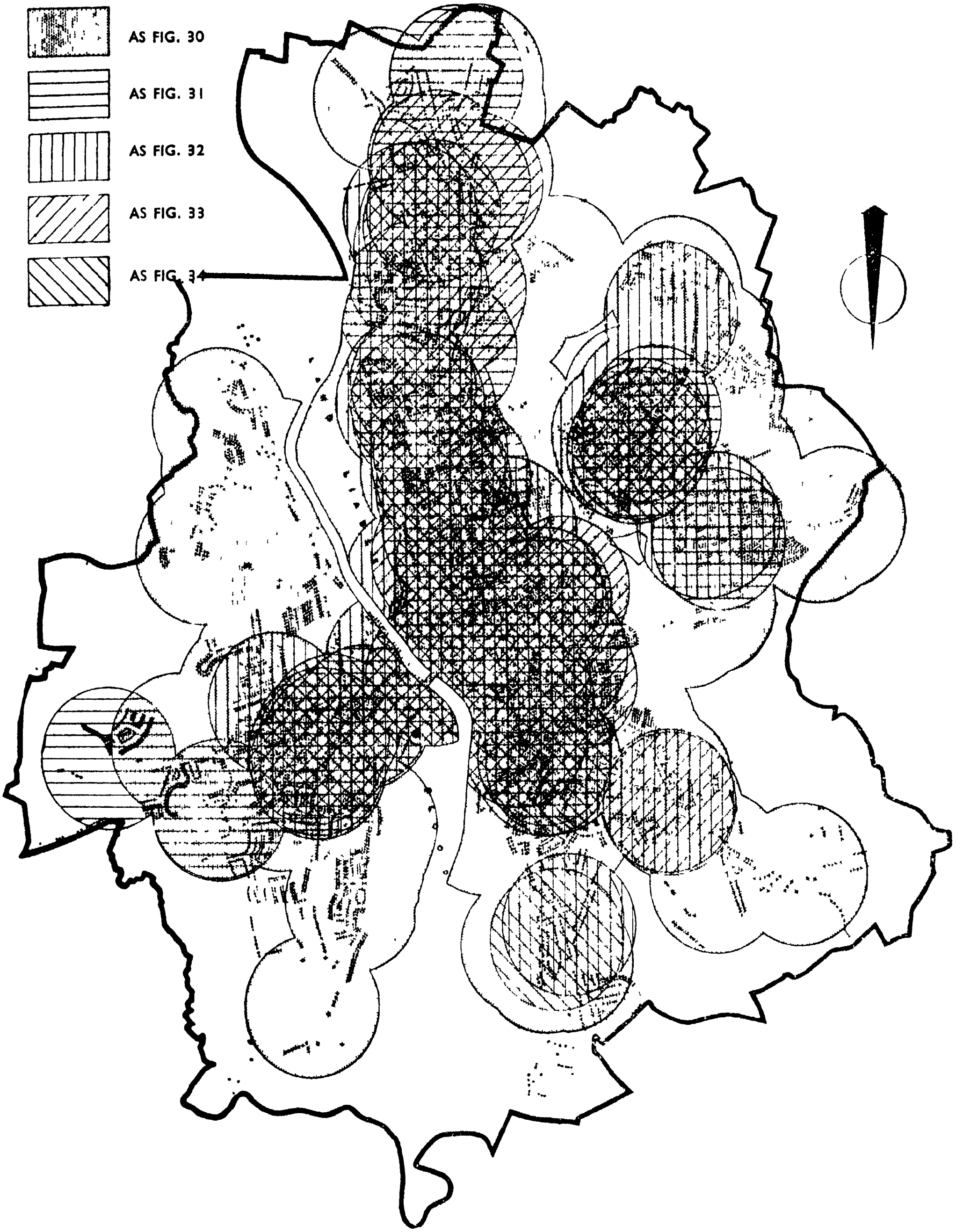

Fig. 35. COMPOSITE MAP OF SHOPS OF DISPERSED TYPE

Superimposition of Figs. 30–34 *with different hatchings produces a 'Union Jack' effect in those areas within a quarter of a mile of all dispersed 'hand-to-mouth' needs: general or grocer's shop, a greengrocer, a butcher, a baker, and a chemist.*

These shops are the minimum essentials of neighbourhood requirements. Shops within the other trades classed as Necessities in Tables VI and VII, found to be numerous within the suburban areas, are a desirable addition to neighbourhood shopping facilities, but they were not considered sufficiently essential to warrant detailed mapping.

The analyses are in map form. The first map (Fig. 28) shows the general location of shops in Worcester. From this an analysis of each of the five essential trades (general shops and grocers being combined) is shown separately (Fig. 30–34) on a base map or background of the distribution of Worcester's minimum population.* The area of a quarter-mile radius round each shop, and also round the Central Shopping Area, is shown by means of shading.

On the final map (Fig. 35), the different analyses 2, 3, 4, and 5 are superimposed on the areas serviced by the general and grocers' shops combined, shown in Analysis 1. This final map thus shows the extent to which the different localities are serviced within the five 'essential' trades. A satisfactory all-round standard is only reached where the five analyses coincide (darkest areas on the map); and it can be seen that, while for general shops and grocers Worcester City is adequately served, it is only in the areas of Rainbow Hill, Sidbury, and the central areas of Barbourne and St. John's that this all-round standard is obtained.

The house-to-house survey served to corroborate the inferences already made. Apart from St. John's (where the majority of comments arose from the inadequacy of the bus services), most of the criticisms were made by householders in Area 4, where Fig. 55 shows the north-eastern fringe of population ill-served. Here several people expressed the need for more shops locally. Most of the suggestions which were volunteered did not state the need for any specific shop; but in a few cases the desirability of having a chemist's shop locally was mentioned, both here and by residents in Area 5. A few people mentioned the need for better postal services near at hand, and additional comments were obtained regarding public houses, restaurants, and catering facilities in general, dealt with in greater detail in Chaps. VIII and XI and marked in Fig. 39.

§3. GENERAL CONSIDERATIONS: TRADERS' FUTURE PROSPECTS

STATISTICAL and other information presented in the first part of this chapter led to the conclusion that Worcester is a good shopping centre. The few comments we had from people who travel to other centres to shop merely illustrate a tendency which is always found for people living in one centre to travel to others just for the sake of novelty and in the hope of finding further variety. This outward move is offset by people coming in to the town from other centres and the surrounding area.

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*See Ch. VII, esp. pp. 137–8. A dot represents five persons: total represented is approximately 57,000.

When considering the future prospects for Worcester traders, we have to bear in mind both the immediate post-war requirements and also the long-term purchasing trends of the consumer. It is likely that in Worcester (as in the country as a whole) an abnormal time-lag, due to postponed and restricted purchasing during wartime, will have to be made good. The length of time taken in making good this deficiency will be dependent upon national policy, i.e. whether restrictions are immediately or gradually lifted. Events following the 1914–18 war suggest that furniture, household equipment, and other of the more durable goods will be much in demand—a demand which will be spread over a number of years; unlike that for less durable goods such as clothing, which, once the restrictions are lifted, is likely to be spectacular for a time and then to diminish to normal proportions.

The trend (possibly accelerated by the Government's proposals for National Insurance) towards an ever-higher standard of living, is likely to reflect itself in increased demand for both durable and luxury goods, such as motor-cars, refrigerators, etc., and smaller articles coming under the 'luxury' category.

If the Government's policy of supporting agriculture is maintained in the future, this also would have repercussions on Worcester as an agricultural and marketing centre, because the agricultural labourer would benefit from greater purchasing power, and with good transport facilities he is likely to make the major part of his purchasing (probably with the exception of foods) in Worcester. The kind of goods demanded by this class of shopper is not so much the 'luxury' type as the habitual moderately priced requirements, mainly coming under our heading Common Requirements.

Apart from increased demands associated with a rising standard of living and the lifting of wartime restrictions, Worcester may also be affected by the increasing practice throughout the country for employers to grant holidays with pay, thus creating a new class of holidaymakers. Worcester even now offers certain attractions to visitors and is a shopping centre for Malvern and Droitwich, which for some time past have been popular centres for holiday-makers. If, however, Worcester itself wishes to make full use of its advantages in this respect and definitely to equip itself to become a holiday centre, it must cater for visitors' shopping needs as well as for their recreational and social demands.*

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*Recreation is considered in Ch. VIII, § 3, and the problems peculiar to the tourist industry in Ch. IV.

Worcester must cater for the shopping requirements both of the new class of holiday-maker, and also the more leisured residential type catered for by towns like Cheltenham, where the traders provide a great number and variety of luxury articles. In addition, for a tourist centre, a high standard of restaurant and catering facilities is also a most important requirement. Mention was made earlier of the facilities provided by Cheltenham and Oxford, which have developed by reason of their own special characteristics. In order to emphasize the provisions which a holiday resort should make, we may list the facilities offered (according to surveys recently made) by various towns which depend upon the tourist industry as their main means of livelihood. The industries in which these towns employed an outstandingly large number of people, and in which they provided a high standard of service, were:

Restaurants, catering, cafés, coffee-houses, etc.;
Hotels, inns, and public houses;
Lodgings and boarding-houses;
Hair-dressing, manicure, and chiropody;
Baths;
Laundries, job dyeing, and dry-cleaning;
Private domestic service;
Other service industries.

The goods for which there was a peculiarly large demand included books and stationery, photographic supplies, and other luxury goods mentioned earlier.

Added to trading developments required in Worcester as a result of national post-war trends and those which Worcester may deliberately court as a holiday centre, shopping facilities may have to be developed on account of industrial changes. Worcester's natural advantages as an industrial centre and the implications of its development as a river port linking up Birmingham and the Black Country with Bristol are dealt with in the chapter on Industry. If these advantages are exploited to the full by industrialists, an increase in the resident population of Worcester would result—affecting not only the shopping facilities demanded of the main Central Shopping Area, but also the number and distribution of shops throughout the suburbs.

Certain areas within the suburbs of Worcester have been shown to be comparatively poorly served for local shopping needs; and even within those areas which were well served as a whole there were certain households in new estates whose daily needs were not catered for within a reasonable walking distance. We have shown in this connection the necessity for good transport in the City and discussed accessibility both to the suburban centres and to the Central Shopping Area. Possibly a circular bus route, linking up suburbs which are at present somewhat isolated, would be advantageous. This might also have an effect upon the present shopping habits of the suburban population, e.g. those living in one suburb would have the chance of visiting the shopping centre of other suburbs.

TABLE X

SHOPPING HABITS

	PROPORTION OF ALL HOUSEHOLDERS IN SAMPLE	
	Visiting central shopping area	Visiting local shops
Daily visits	8·5%	10·5%
Frequent visits (at least three a week)	17·3%	12·6%
Regular visits (once or twice a week)	57·0%	42·3%
Irregular or no visits	17·2%	34·6%
TOTALS ..	100·0%	100·0%

Shopping habits were inquired into during the house-to-house survey. Table X shows the relative frequency of visits by the people in Worcester City to the Central Shopping Area and to the local shops.

17·3% of the householders liked to make frequent visits (i.e. at least three) during the week into the Central Shopping Area and 57·0% regular visits (once or twice a week), in addition to 8·5% making daily visits. This included householders living near a shopping centre or in a more outlying part of the City. A lesser proportion of these householders also visited their local shops regularly. In normal peacetime conditions, when fewer housewives are likely to be in full-time employment, the number who will go frequently during the week to the central and especially local shops will probably be considerably higher. The high proportion of people at the time of survey making frequent and regular weekly visits to the Central Shopping Area demonstrates the accessibility of the City centre—a fact which definitely forms one of the attractions of living in a town the size of Worcester. The town is small enough for the householder to get to its centre easily and cheaply, and yet it is large enough to have (as we have shown earlier in the chapter) a variegated range of central shops.

Comparing Areas, it was found that in the northern part of the Barbourne and Claines Area (Area 3), i.e. districts north of the Ombersley Road/Droitwich Road junction at Gheluvelt Park, 98% made use of the good transport facilities to go at least once a week into the centre of the City to shop. Even in the outlying areas of St. John's and Tolladine, both comparatively ill-served with buses, almost 85% of the housewives still travelled into the Centre for frequent and regular visits. Here, however, we found that complaints were made on the inadequacy of bus services; shopping habits had to fall in with the time-table of infrequent service, or allowance had to be made for unduly long waits owing to overcrowded buses.

Where the suburban shopping centre is of a high standard, such as at Barbourne, and can provide for all requirements except those where the element of variety and personal choice is important, we found that 27% of the people (a figure very much higher than that for any other districts of the City) made only irregular or no visits (rather than regular visits) into the Central Shopping Area for their purchases. On the other hand, people do not make use of their local shops in the more outlying districts (e.g. the southern part of the St. John's area) where dispersed shops are practically non-existent and where a bus has to be taken anyway to reach the suburban shopping centre. They rely upon the visits to the Central Shopping Area to satisfy all their needs.

If this sample of the relative frequency of visits to local and central shops is a correct reflection of the general position, it leads to some revision of preconceived notions. Of the 900 sample householders covered in Table X only 105 lived in the central or sub-central area. Yet several visits weekly were paid to the central shops by more householders than to the local shops, and the frequency of daily visits by individual householders to local shops appear to be only slightly higher than to the central shops. The special advantage of local shops lies in meeting an unexpected urgent or isolated demand for common requirements arising in the interim between periodic downtown expeditions undertaken usually for several purposes. The local shop may thus be said to cater for 'interim' wants.

If in the post-war development increased facilities are offered by travelling shops, it is logical to assume that it will be people in outlying areas who would find them most beneficial for the purpose of satisfying common and daily requirements. Whether it would become a popular habit among housewives to meet many of their necessary and common requirements by purchases from travelling shops is not an easy question to determine. The answer will depend to some extent upon the degree to which women will go out to work. Should the wartime habit of full-time employment for women continue, purchases would be likely to be made on journeys to and from work, or else the travelling shops might meet the need by making journeys during the evenings when the workers would be at home. The housewife remaining at home during the day is the main user of dispersed shops; consequently, should she avail herself increasingly of the facilities which can be offered by travelling shops, this would diminish the need for a greater number of dispersed shops to cater for the increasing suburban population.

Housewives and people living at home like to make frequent visits to their local centre for the sake of variety in their daily routine and for social and recreational purposes. In shopping and distribution, the factor of individual choice (influenced both by custom and changes in fashion) plays a predominant part. Shops must be able to satisfy the personal whims and fancies of their shopping population as well as to adapt themselves to changing fashions. The present system of distribution may be costly in carrying out its function, but this is largely accounted for by the personal taste of consumers. Many people prefer to make their purchases at a less efficient shop, where the element of real personal service plays a large part, rather than to rely entirely upon impersonal 'stores,' however efficient. Though the number of such non-economic men and women may be diminishing (and it is significant that several householders we visited like stores where goods were displayed without obligation to buy), yet non-economic factors must not be neglected. Apart from the economic function of satisfying the consumer's demands, the retail shop, where housewives meet to get a change from home 'chores,' is a definite factor in the social life of the community. This social factor applies no less to shopping centres than to the local shops. Just as people living in or near a suburban centre will travel into the main centre for part of their shopping, so also people will use the excuse of shopping in order to travel to another town, e.g. from Worcester to Birmingham, for a day out and to meet friends.

§4. RECOMMENDATIONS

WORCESTER as a shopping centre for its own and the surrounding population has on the whole fulfilled its purpose satisfactorily in the past. But the future requires new development. The agricultural community which the City serves is, owing to greatly increased wages and guaranteed prices, likely to have greater purchasing power than before the war, and this additional purchasing power is likely to be spent in the sort of goods provided by a market and county town rather than by more local sources. The extension of public transport facilities recommended in Chap. VI will serve to bring this additional purchasing power to Worcester's doorstep. Moreover, if Worcester is to be more of a holiday and residential centre than before the war, as recommended in Chap. IV, additional amenities must be provided in the way of variety of goods shown in shops and in catering facilities.

Accordingly the following recommendations (1–3) may be put forward respecting the Central Shopping Area:

1. The central shopping facilities need to be extended in their provision of goods not requiring frequent and regular purchase, or of luxury type; and in the provision of restaurants and catering generally for out-of-town shoppers.
2. To encourage greater use of Worcester as a port of call for shoppers throughout the surrounding area who own private cars, ample and convenient parking spaces should be provided. Provision should also be made to avoid congestion of main streets or their pavements by reason of loading operations and of standing delivery vehicles. Bypass roads should ease the congestion in the central area arising from traffic not intending to use the shops.
3. Tourists, residents, and shoppers from the country will all be attracted by a shopping centre that is well laid out in pleasant surroundings. Worcester has an initial advantage over rival shopping centres (such as Birmingham) in the absence of vast suburban purlieus through which the shopper must travel, and in possessing a fine site beside the river and fine buildings at its very centre, with room to expand on land not inflated in value. This initial advantage should be seized upon in planning the shopping centre of the future.

Outside the main shopping centre, subsidiary shopping centres and dispersed shops are required for trades meeting daily and periodic needs of the local inhabitants. Recommendations 4–7 apply to such shops:

4. Subsidiary shopping centres in the suburbs or in neighbourhoods are required where shops may be grouped that sell not only goods needed from day to day by houses within, say, a quarter of a mile but also certain categories of goods in common requirement needed less frequently.

   These neighbourhood centres besides containing shops should also serve as sites for infant and elementary schools, sub-post offices, clinics, and local community centres as set forth in Chap. XI, so that, as far as possible, the housewife need only journey to one place and back when carrying out her work of shopping and of caring for the children and engaging in social activities. Among the four Areas distinguished within the City boundary beyond the central area, the development of such centres is called for particularly in the Tolladine and Bath Road districts.

5. Shops selling goods needed day by day should be so distributed that as far as possible no family is farther than a certain radius, say a quarter of a mile, from the shop. How far such a distribution is successfully achieved in Worcester is shown graphically by a series of maps for general and grocery shops, for greengrocers, butchers, bakers, and chemists. From these maps districts can easily be detected that are deficient in one or more of these most essential categories of shops.
6. The provision both of subsidiary shopping centres and of dispersed shops should not wait so long after housing estates have been developed.
7. As an alternative or in addition to subsidiary shopping centres, bus routes should be developed to give easier access to the central shopping area of the City.

CHAPTER X

EDUCATION

Recent national legislation requires each Local Education Authority to draw up a development plan for the reorganization of schools in its area. Essential features of any such plan include provision for the raising of the school-leaving age and the development, at higher standards, of secondary education of all types. This legislation also requires that facilities be provided in continued education, technical and cultural, for adults and for children over school-leaving age.

A successful development plan demands a preliminary survey. The survey should include a detailed examination of the distribution of the schoolchild population within the area in order to achieve satisfactory reorganization on the basis of the new division into nursery, primary, and secondary education. Reorganization should be so planned that efficiency, dependent upon sufficiently large numbers, is combined with accessibility. For instance, where children are concerned, accessibility must allow for travelling capacity, and nursery and primary schools should not (on a reasonable standard for towns) be farther than a quarter of a mile from the home.

This chapter accordingly reports results of an investigation into the exact whereabouts of the home and the school of children in each district of Worcester, and makes some practical recommendations as to specific sites for schools, so that the full method and implications of the investigation can be presented in concrete form. A map (Fig. 36) of the City, giving the area within a quarter of a *mile of schools on a background map of the school population, has been adopted as a helpful method of presentation. A complementary map (Fig. 37), for comparison with reasonable standards, shows diagrammatically the* facts *of the back-and-forth school travel.*

The development of secondary and continued education depends, in its quantitative aspect, on the supply of and demand for accommodation. As a possible model for future surveys a balance-sheet has been drawn up for Worcester presenting, on the one hand, the children resident in the City demanding secondary education (according to the compulsory school-leaving age), and on the other hand, the potential accommodation for them in the City schools that are likely to give secondary education. From the qualitative aspect, there is scope for wide variation in the types of secondary schools which may be provided by Local Education Authorities. The need for extended technical education is clear: Worcester's requirements in this direction are indicated by listing the types of occupation entered by juveniles, thus linking up with the more detailed examination in Chapter IV of the possible future opportunities for juveniles in industry.

§1. OUTLINE OF WORCESTER'S EDUCATIONAL FACILITIES

THE total number of children and students at schools in Worcester in 1944 was approximately 9,700. An analysis of the numbers of pupils within the different age-groups is given in Table I, where they are divided into those attending schools for which the Worcester City Council is responsible and those at other secondary and private schools.

Out of a total of approximately 9,700 schoolchildren, 1,220 (i.e. 13%) come from outside the City. The figures given in Table II show that 79·8% of these children are in the 11-plus age-groups, clearly indicating that

TABLE I

NUMBER AND AGE-DISTRIBUTION OF ALL BOYS (B) AND GIRLS (G) ATTENDING THE DIFFERENT TYPES OF SCHOOLS IN WORCESTER

	Under 5		5–7		7–11		11–14		14–plus		Totals		Total
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	
A. WORCESTER CITY L.E.A.													
Elementary Education													
Junior and Infant School . .	152	136	900	945	1,372	1,286	495	455	18	2	2,937	2,824	5,761
Senior schools	—	—	—	—	65	38	545	566	4	4	614	608	1,222
Special school (open-air) . .	—	—	7	5	17	23	22	21	—	—	46	49	95
TOTALS A . .	152	136	907	950	1,454	1,347	1,062	1,042	22	6	3,597	3,481	7,078
B. WORCESTER CITY L.E.A.													
Higher Education													
Secondary School for Girls . .	—	—	—	—	—	31	—	242	—	149	—	422	422
Junior Technical School . .	—	—	—	—	—	—	—	—	120	—	120	—	120
Junior Commercial School . .	—	—	—	—	—	—	—	—	5	112	5	112	117
TOTALS B . .	—	—	—	—	—	31	—	242	125	261	125	534	659
C. OTHER SECONDARY AND PRIVATE SCHOOLS													
Royal Grammar School . .	—	—	—	—	45	—	236	—	270	—	551	—	551
Alice Ottley School for Girls	—	3	8	29	9	98	—	112	—	150	17	392	409
Cathedral King's School . .	—	—	—	—	58	—	136	—	151	—	345	—	345
St. Mary's Convent	2	1	24	32	14	103	—	85	—	54	40	275	315
College House School . .	—	—	3	12	4	40	—	37	—	6	7	95	102
Worcester College for the Blind	—	—	—	—	3	—	13	—	43	—	59	—	59
Private preparatory schools . .	14	5	37	27	78	50	12	6	—	—	141	88	229
TOTALS C . .	16	9	72	100	211	291	397	240	464	210	1,160	850	2,010
GRAND TOTALS . .	168	145	979	1,050	1,665	1,669	1,459	1,524	611	477	4,882	4,865	9,747
	313		2,029		3,334		2,983		1,088		9,747		

Worcester serves an area considerably wider than itself for secondary and higher education. In fact, as many as 471 out of 1,088, 43% of the total of pupils aged 14 and over at schools in Worcester, do not live within the City.

TABLE II

NUMBER AND AGE-DISTRIBUTION OF PUPILS RESIDENT OUTSIDE WORCESTER ATTENDING SCHOOLS IN THE CITY

	Number of children in specific age-groups					
	Under 5*	5–7*	7–11*	11–14*	14+*	Total
Attending schools of Worcester City Council	—	9	46	186	111	352
Attending other schools	2	30	157	319	360	868
TOTAL ..	2 0·2%	39 3·2%	203 16·5%	505 41·4%	471 38·4%	1,220 100%

*5–7, 7–11, etc., means respectively children of 5 and over who have not yet reached their seventh birthday and children of 7 and over who have not yet reached their eleventh birthday, etc. This convention also applies to Table I.

An examination of the geographical distribution of the homes of children and students resident outside the City shows that, of a total of 577 boys and 643 girls (total 1,220) coming from outside the City, as many as 381 boys and 527 girls (total 908) live in Worcestershire. The Alice Ottley School for Girls and the Cathedral King's School for boys draw about 25% of their pupils from a wider area than this; but apart from these two schools (and some 20 boys and 20 girls attending the Royal Grammar School and St. Mary's Convent respectively), all boys and girls at school in Worcester come from within the County.

The home location of the pupils coming from within the County is given in Table III. For this analysis the County has been divided into four Areas, A, B, C, and D, lying respectively north-west, north-east, south-east, and south-west of Worcester as on the map, p. 239.

The number of boys and girls, taken together, coming from areas A, B, and C is very similar; a considerably higher number, however, come from Area D, to the south-west of the City. These figures are explained by the fact that in Area A the population is rather smaller than in the other areas, in Area B many children go to Kidderminster and other

TABLE III

NUMBER AND RESIDENCE OF BOYS (B) AND GIRLS (G) ATTENDING WORCESTER SCHOOLS

	Worcester City		WORCESTERSHIRE (see map opposite)										Outside County		GRAND TOTALS		
			Area A		Area B		Area C		Area D		Total						
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	Boys	Girls	Total
WORCESTER CITY SCHOOLS																	
Elementary Education	3,528	3,417	21	25	15	10	19	14	14	15	69	64	—	—	3,597	3,481	7,078
Higher education ..	93	347	2	26	3	37	3	26	23	94	31	183	1	4	125	534	659
OTHER SECONDARY AND PRIVATE SCHOOLS																	
Royal Grammar School	358	—	35	—	37	—	20	—	77	—	169	—	24	—	551	—	551
Alice Ottley School ..	11	125	3	43	3	61	—	28	—	46	6	178	—	89	17	392	409
Cathedral King's School	167	—	7	—	15	—	24	—	34	—	80	—	98	—	345	—	345
St. Mary's Convent ..	40	218	—	4	—	4	—	23	—	6	—	37	—	20	40	275	315
College House School	4	40	—	11	2	17	—	5	—	19	2	52	1	3	7	95	102
Worcester College for the Blind	—	—	—	—	1	—	—	—	—	—	1	—	58	—	59	—	59
Private preparatory schools	104	75	4	6	14	7	—	—	5	—	23	13	14	—	141	88	229
TOTALS ..	4,305	4,222	72	115	90	136	66	96	153	180	381	527	196	116	4,882	4,865	9,747

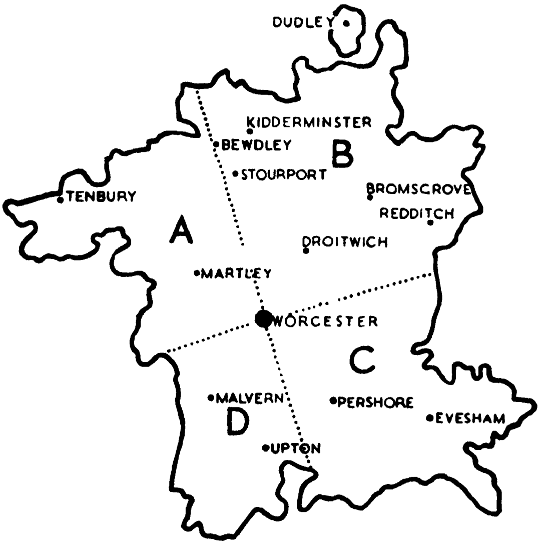
accessible places with secondary schools, and the Evesham Secondary School caters for a large part of Area C. The large numbers from Area D are due to the number of children living in this district who attend the Girls' Secondary School and the Royal Grammar School owing to lack of provision by the County for secondary education at Malvern.

TABLE IV

THE AGE-DISTRIBUTION OF WORCESTER CHILDREN ATTENDING COUNCIL AND OTHER SCHOOLS IN THE CITY

	Under 14		14–plus		Total	
	Nos.	%	Nos.	%	Nos.	%
Worcester City: Elementary and higher education	7,082	90%	303	49%	7,385	87%
Other secondary and private schools	828	10%	314	51%	1,142	13%
TOTALS ..	7,910	100%	617	100%	8,527	100%

This examination of the home location of the children attending Worcester schools has shown the part played by the independent schools in providing secondary and higher education to meet the needs of an extensive area of which Worcester is the centre. In the provision for Worcester children, however, the main responsibility clearly lies with the Local Authority. If the number of schoolchildren living outside the City is deducted from the totals given in Table I, the results (summarized in Table IV) show that the City Council caters at present for only 49% of the school-children aged 14-plus, but as many as 90% of the children aged 5–14. It is the needs of this 90% which are considered in the next section.



Areas referred to in Table III.

§2. THE FUNCTION OF THE LOCAL EDUCATION AUTHORITY

(*a*) EXISTING PROVISION FOR ELEMENTARY EDUCATION

SCHOOLS of the City Education Department providing elementary education are shown by type and capacity (mid-year, 1944) in Fig. 36. Identification numbers are given on this map corresponding to those in Table V put against the name of the school. The home location of Worcester children attending these schools is indicated by one black dot, representing one child. In all, there are seventeen schools catering mainly for juniors and infants, the Samuel Southall and Christopher Whitehead Senior Schools, and the Rose Hill Open-air School. The distribution of children in the different parts of the City can be clearly seen from the map; and by means of circles of a quarter-mile radius round each of the seventeen schools which cater for juniors and infants,* the map also shows the number of young children who live at a distance of more than a quarter of a mile from their nearest school.

Conspicuous features of the map† (Fig. 36) are:

1. A very large number of the schools lie within the Central Area (Area 1). Many children living within this Area have a choice of schools within a quarter of a mile of their home.

2. In the outer districts of the City, one school is accessible to most city children within a quarter of a mile from home, with the exception of those children living in:

(*a*) the more outlying parts to the west and south of St. John's (Area 2),
(*b*) Housing estates in the north of Area 3,
(*c*) The Brickfields Road Area, north-east in Area 4,
(*d*) Newtown Road and Ronkswood Hill Area, south in Area 4,
(*e*) Green Hill and Camp Hill Road, Area 5.

3. There is an outstandingly large number of children on the new Tolladine estates (Area 4).

For a detailed analysis of the location of schools in relation to the homes of the children it was found convenient to survey the position separately for each of the five Areas of the City.‡ The number of children on the registers of each of the elementary schools (mid-year, 1944) and the distribution of their home as between the five Areas is given in Table V. The table shows the percentage of children attending school within the same Area as that in which they live,§ and the percentage who travel to one of the other four Areas; it also shows for each school the extent to which its numbers are made up of children living in the same Area as the school and in each of the other four Areas. The interchange between Areas is shown diagrammatically in Fig. 37, illustrating the journey to school.

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*Physical obstructions, e.g. rivers or railways, may cut a segment off the circle.

†To identify names of places within the City, the street map (Fig. 100) should be used.

‡See note, p. 205.

§That this is the prevailing situation can be seen from the table in the higher numbers along a diagonal from top left to bottom right.

Area 1 (*Central*). Table V shows that, of all the children who have their homes in Area 1, 743 (i.e. 86·5%) attended schools in that Area. The outstanding feature of the figures, however, is that only 743 out of a total of 1,756 on the school registers, i.e. only 42·5%, live within the Area. The remaining 57·5% travel into the centre mainly from Areas 3, 4, and 5.

Area 2 (*St. John's*). Of the five Areas, St. John's is the most self-contained. As many as 95·5% of the schoolchildren living in St. John's go to schools within the Area. The remaining 4·5% is chiefly children going to the Roman Catholic School in Area 1. Table V also shows that the St. John's schools draw only a negligible number of children from other Areas.

Approximately 200 children live in a cluster in the south-west, and a further 100 in the west part of the Area—all in districts outside the outer circles in Fig. 36, indicating a quarter of a mile from any school. Of this number 80 are senior children who attend the Christopher Whitehead School, illustrated in Fig. 95. For the remaining 220 juniors and infants the nearest schools are in the centre of St. John's (one of these is shown in Fig. 97). The distance varies from ¼ to ¾ mile; the fact that so many are clustered together in the south-west part of the Area suggests the possibility of maintaining a new primary school and/or nursery school in that district.

In the northern part of St. John's, Comer Gardens School is well located to serve the children of that district, but owing to the scatter of the population the average distance between home and school is inevitably greater than in more built-up areas; in 1944, 40% travelled farther than a quarter of a mile.

Area 3 (*Barbourne and Claines*). Only 53·5% of the schoolchildren living in Area 3 attend schools there. This figure appears comparatively low, since there is no elementary school catering for senior children in Area 3. (Children over 11 attend the Samuel Southall Senior School. It is midway between the housing districts of Areas 3 and 4, but is included in Area 4 as the canal is taken to be the dividing-line between the two Areas. Table V shows that there are as many as 301 senior schoolchildren in this Area (22% of the total) attending the Samuel Southall School.)

Of the total number of schoolchildren living in Area 3, 21% attend schools in Area 1. They are mainly children living in the south part of the Area, and go to St. Martin's (for boys), St. Nicholas (girls and infants); as many as 106 infants go to St. Mary's. There is already a school

TABLE V

THE JOURNEY TO ELEMENTARY SCHOOL

Number of schoolchildren living in each of the five Areas analysed according to the school which they attend and the Area in which the school is situated.

Schools (Divided into Areas)	Type*	Number of Schoolchildren Living in Each Area					
		Area 1	Area 2	Area 3	Area 4	Area 5	All Areas
Area 1							
1. St. Paul's	M. and I.	179	9	7	140	91	426
2. St. Peter's	B., G., and I.	167	4	9	4	196	380
3. Undenominational	J.M. and I.	152	1	3	22	5	183
4. St. Mary's	I.	67	—	106	2	—	175
5. St. Martin's	B.	65	2	51	32	19	169
6. St. Nicholas	J.M. and I.	49	—	57	4	2	112
7. St. George R.C.	M. and I.	64	49	54	119	25	311
Totals attending schools in Area 1		*743* (86·5%)	*65* (4·5%)	*287* (21·0%)	*323* (15·5%)	*338* (29·5%)	*1,756* (25·6%)
Area 2							
8. St. John's	J.B., J.G., and I.	1	499	2	1	—	503
9. Christopher Whitehead	S.B. and G.	12	368	30	2	2	414
10. St. Clement's	J.M. and I.	2	295	—	—	—	297
11. Comer Gardens	J.M. and I.	3	164	—	—	—	167
Totals attending schools in Area 2		*18* (2·0%)	*1,326* (95·5%)	*32* (2·5%)	*3* (0%)	*2* (0%)	*1,381* (20·2%)
Area 3							
12. St. Stephen's	J.B., J.G., and I.	1	—	407	3	—	411
13. Claines St. George's	J.M. and I.	14	—	320	5	—	339
Totals attending schools in Area 3		*15* (2·0%)	—	*727* (53·5%)	*8* (0%)	—	*750* (11·0%)
Area 4							
14. Samuel Southall	S.B. and G.	6	—	301	412	1	720
15. Gorse Hill	J.M. and I.	—	—	—	583	—	583
16. Rainbow Hill	J.M. and I.	—	—	—	569	—	569
Totals attending schools in Area 4		*6* (0·5%)	-	*301* (22·0%)	*1,564* (75·0%)	*1* (0%)	*1,872* (27·3%)
Area 5							
17. Stanley Road	B., G., and I.	71	1	6	191	381	650
18. Cherry Orchard	J.M. and I.	—	—	—	—	257	257
19. Red Hill	G. and I.	8	—	6	2	168	184
Totals attending schools in Area 5		*79* (9·0%)	*1* (0%)	*12* (1·0%)	*193* (9·5%)	*806* (70·5%)	*1,091* (15·9%)
TOTAL (attending ALL SCHOOLS)		861 (100%)	1,392 (100%)	1,359 (100%)	2,091 (100%)	1,147 (100%)	6,850 (100%)†

*M = Mixed; B = Boys; G = Girls; I = Infants; J = Juniors; S = Seniors only.

†This total excludes: 133 children living outside the City, 95 children attending the Open-air School. (To correspond with the total of 7,078, given in Table I for elementary education, these numbers should be added.)

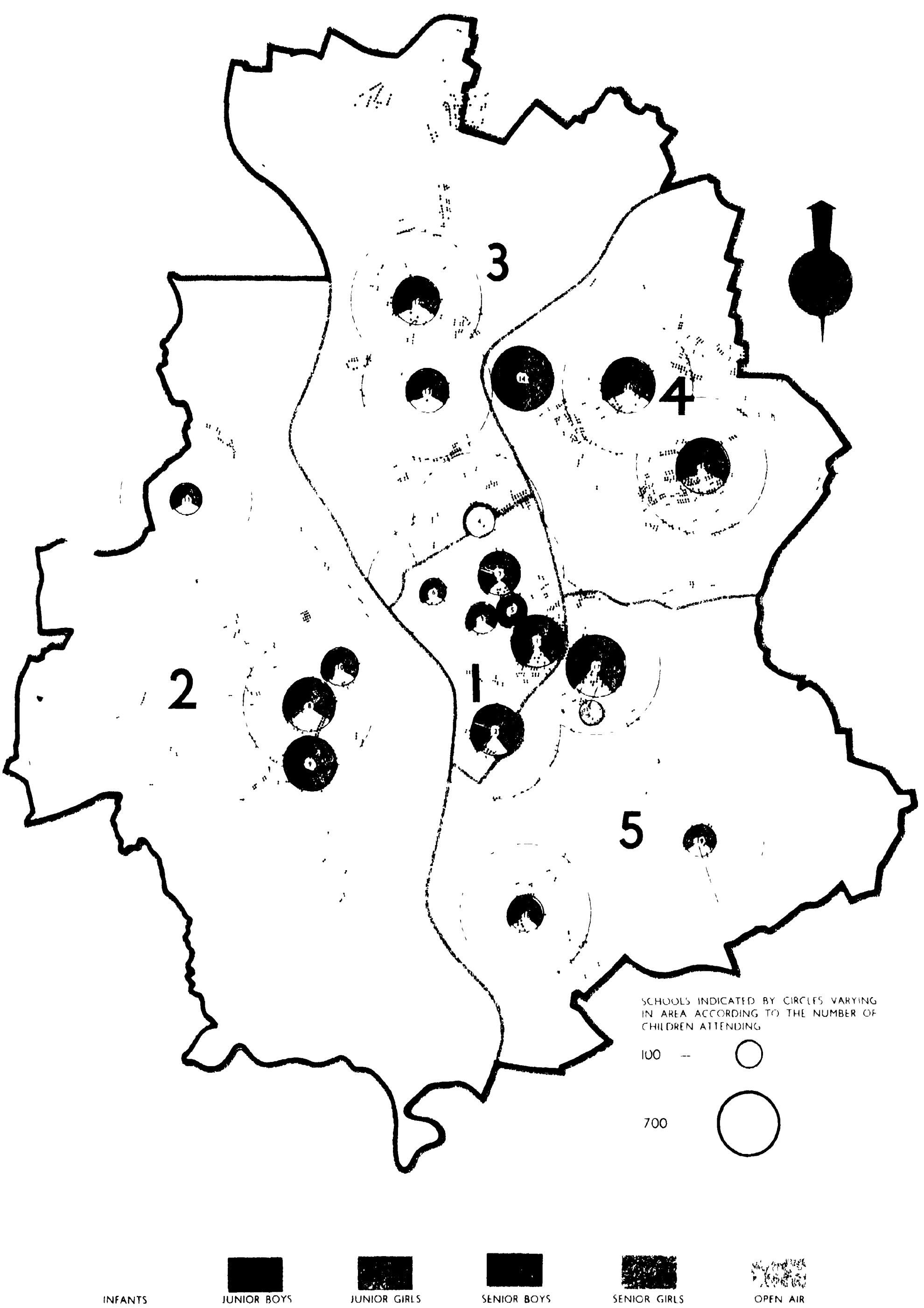
3
4
2
1
5
SCHOOLS INDICATED BY CIRCLES VARYING IN AREA ACCORDING TO THE NUMBER OF CHILDREN ATTENDING
100
700
INFANTS
JUNIOR BOYS
JUNIOR GIRLS
SENIOR BOYS
SENIOR GIRLS
OPEN AIR

FIG. 36. TYPE, CAPACITY, AND ACCESSIBILITY OF ELEMENTARY SCHOOLS IN THE FIVE AREAS OF THE CITY, 1944

The small numbers refer to the school, as listed in Table V. Areas within a quarter-mile of primary departments (a maximum distance for younger children) are defined by a red line. Each dot indicates where one child lives.

catering for juniors (mixed) and infants in the south part of Area 3 (Claines St. George's), but its capacity is insufficient to cater for all the children of the district.

St. Stephen's School serves the northern part of Area 3, but is not very conveniently situated for the purpose. Approximately 150 pupils live within a quarter of a mile of the school, but the remaining 260 live in districts farther north, from ¼ to 1 mile distant. An additional 70 children from this part of the Area are seniors attending the Samuel Southall School.

Area 4 (*Rainbow Hill and Tolladine*). Table V shows that out of approximately 2,100 schoolchildren living in Area 4, 1,564 (i.e. 75%) attend schools in the same Area and the remainder are divided between 15·5% attending schools in the Central Area and 9·5% attending Stanley Road School (see Fig. 96) in Area 5.

An examination of Fig. 36 shows that, on the basis of the distribution of schoolchildren, the Area can be subdivided into four main 'neighbourhoods,'* namely:

(*a*) Rainbow Hill housing estates,
(*b*) Astwood,
(*c*) Brickfields Road estate,
(*d*) Estates round Gorse Hill and Tolladine Road.

Almost all the children living in neighbourhoods (*a*), (*b*), and (*c*) go either to Rainbow Hill or the Samuel Southall School. In the case of Rainbow Hill School, almost all the pupils attending it come from these three districts, although Samuel Southall School necessarily caters for a considerably wider area.

Gorse Hill School draws approximately 70 pupils from Neighbourhood (*c*). The remaining number of its pupils live in its own neighbourhood (*d*). There are in all some 880 schoolchildren living in the Gorse Hill neighbourhood (*d*), and their distribution among the different schools is as follows:

Gorse Hill School (juniors and infants)	500
Schools in Central Area, of which 110 go to St. Paul's and 70 to St. George's (Roman Catholic)	195
Rainbow Hill School	5
Stanley Road School (mainly seniors)	80
Samuel Southall School (seniors only)	100
	880

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*For place names, see street map (Fig. 100).

In addition to the schoolchildren of Area 4 living in these four 'neighbourhoods' there are 70 children living by Ronkswood Hill and a further 80 in the districts bordering the Central Area. These children attend either the Stanley Road School (illustrated in Fig. 96) or else St. Martin's or St. Paul's School in the Central Area.

These numbers mapped in Fig. 36 show the dense child-population on the new housing estates in this Area. Though the Gorse Hill School caters at present exclusively for children living within its immediate vicinity, there are still over 100 junior and infant children in the district who have to travel a longer distance to school in the Central Area.

Area 5 (*Spring Hill, Cherry Orchard, and London Road*). In Area 5 the total number of children both living within the Area and attending schools there is about 800. There is, however, a certain amount of interchange between Areas, shown clearly in Fig. 37. For example, the Stanley Road School draws approximately 200 children from Area 4 and 70 from Area 1 (see Table V); and on the other hand more than 300 children travel from homes in Area 5 to schools in Area 1.

The homes of the schoolchildren living in Area 5 are distributed among district 'neighbourhoods' as follows:

BORDERING ON THE CENTRAL AREA	
On the North: Canal Side, Stanley Road, and Fort Royal	300
On the South: Green Hill and Diglis	200
TO THE SOUTH	
Cherry Orchard	410
TO THE EAST	
Red Hill and London Road	80
IN THE CENTRE OF THE AREA	
Battenhall Road and Victoria Avenue (including 30 children from the Cottage Homes) ..	150
	1,140

In the Cherry Orchard neighbourhood, little more than half the total number of children (i.e. 230 out of the total of 410) attend Cherry Orchard School. The school has few children on its register who live farther away than a quarter of a mile, and even for these few Cherry Orchard School is the most convenient. Of the remaining number of children living within this district, 120 travel to schools in the Central Area, 30 attend Stanley Road School, and 30 go to Red Hill, although none of these schools is conveniently situated to serve this particular district.

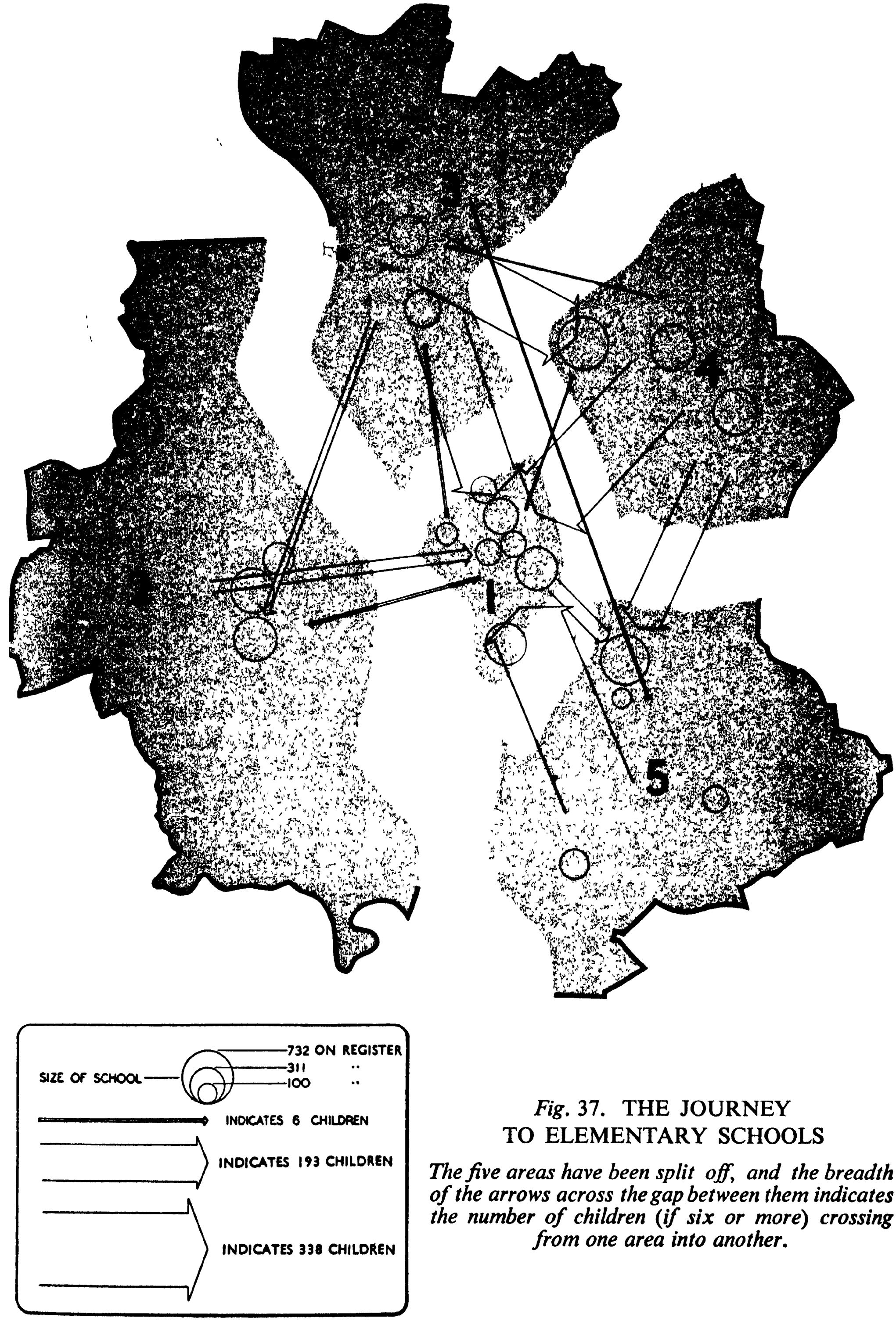

Fig. 37. THE JOURNEY TO ELEMENTARY SCHOOLS

The five areas have been split off, and the breadth of the arrows across the gap between them indicates the number of children (if six or more) crossing from one area into another.

St. Peter's and St. Paul's Schools within the Central Area are conveniently accessible to many children living in those parts of Area 5 bordering on the Central Area (i.e. the Diglis and Canal Side–Fort Royal neighbourhoods), but in fact the majority of children from these parts attend the Stanley Road School.

In the Battenhall Road and Victoria Avenue neighbourhood the children in the main go to Red Hill (Girls and Infants) or Stanley Road, the nearest school catering for boys. There are insufficient girls and infants within the Red Hill district to fill the school's capacity, so it takes in children living at distances as great as a mile from the school, drawing not only from Victoria Avenue and Cherry Orchard, but also from the Green Hill and Fort Royal Areas.

To sum up the needs disclosed. The old schools in the centre (*Area* 1) are no longer filled by children from their own locality, owing to the changing distribution of population within the City.

St. John's district (*Area* 2) is more self-contained than the other four Areas, separated as it is by the river Severn from the rest of the City. There should be sufficient capacity in schools within the Area to take every child living there, with the exception of those requiring special provision or specialized teaching. The figures in Table V show that this principle has been adhered to. There are, however, over 300 juniors and infant children who have to travel more than a quarter of a mile to their nearest school within this Area. Some of these children are grouped together on the new housing estates (groups which indicate districts suitable for the siting of new primary and nursery schools); others live in homes too remote or too widely scattered to be able to avoid the longer journey.

The figures for *Area* 3 show that only 53·5% of the children living in that Area attend schools there, but the comparatively large number travelling out of the Area includes children attending St. Mary's Infants' School and the Samuel Southall Senior School, which are situated near the boundaries drawn between this Area and Areas 1 and 4 respectively. There are approximately 190 junior and infant children living in the northern part of this Area who are not served by a school within a quarter of a mile distance of their home, and an additional school might be planned here. Even though the majority of the outlying houses are within easy reach of a main bus route (see Fig. 20) with direct access to the schools, bus travel is not very suitable for young children.

The dense child-population in *Area* 4 shows clearly in Fig. 36. Over a number of years this outstanding difference in density of child-population within the different suburban districts will be less pronounced, but the same tendency for a disproportionately large number of children will recur wherever new housing estates are developed. The present position on the Brickfields and Tolladine estates in Area 4 is that there are some 1,400 schoolchildren, of which approximately 250 are seniors attending the Samuel Southall School, 570 are children who attend the new Gorse Hill Junior and Infants' School, and 220 go to Rainbow Hill School—all in their own Area; but 150 go to Stanley Road School in Area 5, and the remaining 210 journey to the older schools in the centre of the City.

In *Area* 5, the Cherry Orchard neighbourhood has a problem similar to Area 4 in that there are approximately 410 children living there, although Cherry Orchard School at present takes only 230 pupils. In the London Road neighbourhood there is no school which caters for boys; and children in this part of the City, and in the district lying between London Road and Bath Road, do not have convenient access to Stanley Road and schools in the centre of the City. This Area appears to be less well served than any of the other four Areas.

(*b*) THE IMPACT OF THE EDUCATION ACT, 1944

In planning the future provision for education in the City, the Education Act requires the Local Authority to make separate provision for Nursery, Primary, Secondary, and Further Education. The ages of the children normally to be provided for under the first three headings fall into the following groups: under 5, 5–11, and 12 and over, with the minimum leaving age of 15, later to be raised to 16. In some cases, depending on local circumstances of the number of children in the area, and the programme and methods of teaching, the change from nursery and infant to the primary stage may be at 7 instead of 5; but transfer from primary to secondary education is universally accepted at the age of 11–12.

Each Local Education Authority is instructed to make a development plan for its area, which will include:

(*a*) A survey of all the schools in relation to any town planning and housing schemes that are being considered;

(*b*) A calculation of the number of primary and secondary schools needed, how far existing buildings can be adapted and brought up to new standards, and what new schools will be necessary.

Apart from the provision for nursery, primary, and secondary education, the Local Education Authority in framing its plans has to consider handicapped children and boarding accommodation, either in boarding-schools or otherwise. Special schools and classes for handicapped children, together with ancillary services such as the provision of milk, meals, and school medical service, were considered in Chap. VIII.

Quantitative Aspects

In Worcester, the numbers of children (boys and girls taken together) within the new age-groupings are distributed among the schools in the five major Areas as shown in Table VI (A). The figures were taken from the school registers at mid-year, 1944. For simplicity, the analyses in Table VI make only a single calculation, based on a division between nursery and primary education at the age of 5.

On Table VI (B) the number of pupils in each of the age-groups is analysed according to the Areas in which they live, so that a satisfactory estimate can be obtained of the provision to be made in each Area of the City to meet the requirements of the Education Act in respect of children within these age-groups.

TABLE VI

DISTRIBUTION OF SCHOOLCHILDREN WITHIN AGE-GROUPS (MID-YEAR 1944)

(A) According to the location of their school

Age-group	Numbers of children on registers of elementary schools within the five areas					
	Area 1	Area 2	Area 3	Area 4	Area 5	Total
Under 5	120	36	36	34	62	288
5–11	1,236	1,113	714	1,395	788	5,246
12–plus	400	232	—	443	241	1,316
TOTAL ..	1,756	1,381	750	1,872	1,091	6,850*

(B) According to the location of their home

Age-group	Numbers of elementary schoolchildren living in the five areas					
	Area 1	Area 2	Area 3	Area 4	Area 5	Total
Under 5	96	36	60	34	62	288
5–11	574	1,151	1,019	1,658	844	5,246
12–plus	191	205	280	399	241	1,316
TOTAL ..	861	1,392	1,359	2,091	1,147	6,850*

*As in Table V, County children and children attending the Open-air School are excluded from these totals, but are reckoned in estimates of needs, e.g. Tables VII, VIII.

School accommodation should be taken as somewhat lower than the figures indicate, since many of the existing classes, particularly in the newer suburban schools, have considerably more pupils than the maximum of forty suggested in the Education Act—a maximum which it is hoped will be further reduced at a future date.

In catering for the needs of children aged 12 or over, allowance must be made for an increase in numbers of approximately 50% because of the raising of the school-leaving age to 15; and subsequently a similar increase must be allowed for when the leaving age is raised to 16. Thus 50% and 100% must be added to the number of children aged 12-plus in Table VI (B), and to the 76 County children attending Christopher Whitehead Senior School (Area 2) and 12 County children attending the Samuel Southall Senior School (Area 3). The estimate of children requiring school places in each Area can then be set out as in Table VII.

TABLE VII

ESTIMATES OF THE NUMBER OF CHILDREN IN THE FIVE AREAS REQUIRING SECONDARY EDUCATION, BASED ON EXISTING NUMBER AT ELEMENTARY SCHOOLS

Total 12-plus if:	Area 1	Area 2	Area 3	Area 4	Area 5	Total
(*a*) Leaving age 15 ..	280	420	440	600	360	2,100
(*b*) Leaving age 16 ..	370	560	590	800	480	2,800

In addition to these senior children who attend elementary schools of the Local Authority and who will, under the Act, become secondary-school children, 240 children (aged 13–16) attend full time at the Junior Technical School and the Junior Commercial School, and there are also many ex-elementary schoolchildren of ages 12–16 who have obtained places at the Girls' Secondary School and the Royal Grammar School for Boys. The following is the total of children aged 12 and over (fee-paying and not) attending the Girls' Secondary School (L.E.A. school) and the Royal Grammar School for Boys (1944–5) whose homes are in Worcester:

Girls' Secondary School	200
Royal Grammar School for Boys ..	280

Should better facilities for Secondary Education be provided in the County districts, these two schools in Worcester could accommodate considerably more Worcester children, since at present about 190 boys and 170 girls attending these schools live outside the City. It would be a fair assumption, working on the basis of existing numbers (living in and out of the City) at the schools, that accommodation will be available to some 400 boys and 300 girls aged 12 and over living in the City. This estimate makes allowance for the possibility of allocating a certain number of places to County children.

If it is assumed that the capacity of the schools is equal to the existing number on their registers, and also that the existing sizes of classes are in conformity with the regulations, then Table VIII can be drawn up to balance with existing accommodation the number requiring accommodation in the newly planned secondary schools, *controlled or substantially supported by the City.*

This method of balancing supply and demand shows that if in Worcester the existing senior and secondary schools (together with a school equal in size to the Stanley Road School, which does not at present cater exclusively for senior children) are used as secondary schools for children of 12 and over, then (1) with the minimum school-leaving age 15, the classroom accommodation is approximately sufficient to meet requirements; (2) with the raising of the school-leaving age to 16, additional classroom accommodation is needed for approximately 700 pupils. The estimates made in this example of balancing and those given in Tables VI and VII consider merely the numerical, quantitative aspects of the problem which Worcester will be called upon to face in ensuring sufficient classroom capacity for the number of children of different ages living in the City. Qualitative problems that are the concern of the Local Education Authority in drawing up its development plans under the new Act, include accessibility of schools, initiation of nursery schools, and the lines of development of secondary schools.

Qualitative Aspects

In planning nursery and primary schools their location is important in relation to the distribution of child-population, as young children should have easy access to school. The distribution of children within Worcester is shown in Fig. 36, and the numbers aged under 5 and 5–11 are given separately for each of the five Areas in Table VI (B).

For the under-5 age-group, there are at present in Worcester no independent nursery schools. Nursery classes are provided in nine of the junior and infant schools, and in addition many infant schools cater for children of 4, without forming special nursery classes for them. Of the 288 children under 5 attending schools, 96 live in Area 1—the highest

TABLE VIII

BALANCE OF SUPPLY AND DEMAND: SECONDARY SCHOOLS

Estimates made in round numbers

Existing potential accommodation for senior children resident in Worcester in schools controlled or substantially supported by the City*		Schoolchildren 12–15, resident in Worcester, requiring accommodation under the Education Act (1944) in secondary schools	
Christopher Whitehead Senior School	490	Estimates given in Table VII (based on existing number of children at elementary schools)	2,100
Samuel Southall Senior School	730		
Stanley Road School†	650	Worcester children now at Junior Technical School	90
Junior Technical School	90	Worcester children now at Junior Commercial School	90
Junior Commercial School	90		
Worcester Secondary School for Girls	300	Worcester children now at Girl's Secondary School	190
Royal Grammar School for Boys	400	Worcester children now at Royal Grammar School for Boys	280
	2,750		2,750
School-leaving age 15: Balance	—	*When school-leaving age is raised to* 16, *extra places needed*	700
School-leaving age 16: Balance (deficiency)	700		
	3,450		3,450

*This excludes Cathedral King's School and Alice Ottley School.

†For the purposes of this example, the Stanley Road School has been included as though it catered exclusively for senior children.

figure for any of the five Areas. This is probably because four of the schools providing special nursery classes are in that Area, and since attendance is voluntary, children as young as this are only likely to be sent to school if it is very near their home. In the course of the house-to-house inquiry a few parents stated that they would like to send their children to school at an earlier age than 5 if suitable facilities were near at hand. It is difficult to estimate the future demand for nursery schools or classes, but it is likely that it will be somewhat higher than that at present evident should more accessible facilities be provided within the suburban areas. In addition to this, many parents availing themselves in 1944 of the services offered by the wartime nurseries (then catering for more than a hundred children of nursery-school age) may wish to send their children to nursery schools if the former are closed down.

The location of all existing elementary schools in relation to the homes of the younger schoolchildren had full consideration in § 1. It was pointed out that while junior and infant children living in certain suburban districts of the City were insufficiently provided for within their own locality, in the centre of the City accommodation in the schools outran the child-population.

Clearly, with the provision of new schools within the suburbs to meet existing and future needs of new development areas, some of the older premises within the centre of the City will be discarded. Detailed regulations both as to recreational facilities and building standards are prescribed by the Act, and though it may be necessary to continue making use of all these older buildings during the transitional period, in many cases the siting and condition of the premises is such that it would be inadvisable to attempt to bring them up to new standards.

For children of secondary-school age, the Local Education Authority is instructed in the Act as follows:*

> Secondary schools available for an area shall not be deemed to be sufficient unless they are sufficient in number, character, and equipment to afford for all pupils opportunities for education offering such variety of instruction and training as may be desirable in view of their different ages, abilities, and aptitudes, and of the different periods for which they may be expected to remain at school, including practical instruction and training appropriate to their respective needs.

(*c*) FACILITIES FOR SECONDARY (TECHNICAL) AND FURTHER EDUCATION

The Junior Technical and Junior Commercial Schools have pupils aged 13–16, giving 100% Special Places. The figures for 1944 showed 120 boys on the register at the Junior Technical School, and 5 boys and 112 girls at the Junior Commercial School (78% of the pupils are Worcester City children, the remainder live within the county, mainly in the Malvern district). Engineering covers the most important group of subjects at the Junior Technical School at present, although a large portion of its premises has been turned over to Building.

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*Education Act (1944), Sec. 8 (i).

In normal years, approximately 1,000 pupils attend evening classes in engineering, commercial, and art subjects and for general courses. The schools' evening students are drawn mainly from their own day classes and from Worcester industrial firms. Junior Evening Institutes function at the Christopher Whitehead, Samuel Southall and Stanley Road Schools, but apparently are not instrumental in providing new students for the Technical School. The majority of the pupils attending the engineering classes are employees of three of the largest firms in Worcester. An attempt is being made by the Porcelain Company to re-establish a young labour force for pottery, as the firm has felt the lack of junior labour for the past three or four years. The old demand for classes for the printing industry has not been maintained recently. There is a small demand for Language classes.

To provide better training for apprentices in the engineering, building, and pottery industries, part-time day classes have been revived and extended since September 1944. The figures on 31st March, 1945 give the number of apprentices attending these classes as follows:

Engineering ..	185 (boys)
Building	57 (boys)
Pottery	119 (boys and girls)

Part-time day classes providing a general and commercial training were commenced in February 1945 and had an attendance of some 40 pupils by 31st March. 32 girls also attend Domestic classes, which were recommenced in September 1944; the full-time Domestic Science Department and the Day School for Art were suspended during the war.

Although the present premises are quite inadequate for the purpose, there is wide scope for the development of technical educational facilities within the City. They would be an invaluable assistance to the City's industries, and also to agriculture in the surrounding area. At present no facilities exist for courses on Soil Chemistry, Pest Control, and other subjects which would be helpful to young people interested in farming.

Examining the position of juveniles in industry in Chap. IV, § 7 (*c*), it was pointed out that there is likely in the future to be a shortage of juveniles in the City compared with the number of jobs open to them. The analysis in Table IX indicates the main avenues of employment for juveniles prior to the war, and shows the types of trade which will have to adjust their labour organization as the school-leaving age (and also the standard of knowledge and skill of juveniles) is raised. To ensure that the best use is made of the educational and training facilities open to juveniles, the closest co-operation will be required between the L.E.A. and prospective employers.

TABLE IX

ANALYSIS OF PLACING OF JUVENILES (AGES 14–17)* INTO EMPLOYMENT IN 1936 AND 1937

(Information supplied by the Ministry of Labour)

Occupation (Ministry Description)	Number of boys placed	
	1936	1937
(*a*) ENGINEERING	401 = 54%	333 = 61%
Fitting	174	128
Casting-trimming	73	112
Sheet-metal work	34	30
Platers' assistants	25	16
Foundry work	15	14
Metal-polishing	46	9
Tin factory work	15	9
Other engineering	19	15
(*b*) OTHER MANUFACTURING	88 = 11·5%	61 = 11%
Tanning	12	5
Gloving	20	7
Pottery	37	33
Printing	6	—
Timber trades	13	16
(*c*) BUILDING, ETC.	27 = 3·5%	20 = 3·5%
Brickyards	13	2
Building	8	9
Painting	6	9
(*d*) DISTRIBUTIVE AND SERVICE TRADES	151 = 20%	83 = 15%
Garage work	10	8
Lorry mates	25	13
Porters and errand boys	76	34
Warehouse boys	13	3
Shop assistants	27	25
(*e*) CLERICAL WORK	43 = 6%	27 = 5%
Junior clerks	43	27
MISCELLANEOUS	37 = 5%	25 = 4·5%
GRAND TOTAL	747 = 100%	549 = 100%

	Number of girls placed	
	1936	1937
(*a*) MANUFACTURING TRADES	323 = 57%	287 = 60·5%
Tin factory work	74	58
Sheet-metal work	6	2
Gloving	55	43
Other clothing trades	61	56
Pottery	26	38
Printing	9	6
Timber trades (and painting)	21	16
Nut sorting (chocolate factory)	30	23
Cardboard box	5	13
Packers	28	28
Rope-working	8	4
(*b*) DISTRIBUTIVE AND SERVICE TRADES	111 = 19·5%	83 = 17·5%
Shop assistants	56	43
Domestics	47	17
Laundry and cleaning	8	23
(*c*) CLERICAL WORK	83 = 15%	71 = 15%
Junior clerks	83	71
MISCELLANEOUS	48 = 8·5%	34 = 7%
GRAND TOTAL	565 = 100%	475 = 100%

*Includes not only children who have just left school, but those who changed their employment between these ages.

Under the new Education Act, technical training will be provided partly by the secondary school and partly by the L.E.A.'s facilities for further education. Under the Act, every L.E.A. must within the next few years establish county colleges where young people over the compulsory school age and under 18 who are not in full-time attendance at any other school or college must attend. Attendance must be for either one whole day or two half-days a week, for 44 weeks in the year; or for one continuous period of eight weeks or two periods of four weeks. Employees will be able to run their own continuation classes, which young people may attend instead of the county colleges if the L.E.A. is satisfied that they are receiving suitable and efficient instruction. The purpose of these colleges is to continue the general education of young people who have started on employment and also to offer an alternative to the evening classes for those who are keen to progress in their work.

The L.E.A. is required under the new Act to submit, at some future date, a scheme of *adult education*, to be carried out when approved by the Minister. In Worcester at present a few courses are run by the Workers' Educational Association in conjunction with Birmingham University, but no special provision for adult education is made by the L.E.A.

§ 3. RECOMMENDATIONS

1. Examining the distance younger children had to go to elementary schools, it was found that, on the whole, the siting of schools was satisfactory in most areas. But in some of the outer areas where many children were concentrated the distance was too long.

In the establishment of the new primary schools, the following sites* should be considered:

(*a*) North Claines, to serve housing estates in the northern part of the City (Area 3);
(*b*) The southerly part of St. John's, to serve the Bromwich Road and Hanbury Park estates (Area 2);
(*c*) Green Hill, to serve the London and Bath Road Area. Here there is at present no school at all for boys.

In the Rainbow Hill area the existing school is conveniently sited for serving the Rainbow Hill, Astwood, and Brickfields districts, but its capacity is inadequate to meet the needs of all children from these areas.

2. Many of the old schools in the Central Area have poor buildings, and since this Area contains relatively few children such schools should be closed. Recommendations 1 and 2 taken together should reduce many of the long distances travelled by young children coming from outer areas into the centre for school.

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*For identification, see street map (Fig. 100).

3. Some demand was found for schools to take children under 5 years of age, and parents who have made use of wartime nurseries may well support this demand. Such nursery facilities should be provided at all primary schools, as they need to be easily accessible and be well scattered throughout the City.

4. It was found that several housing estates (particularly the Tolladine estate) had a disproportionate number of children of school age, putting a heavy strain on school accommodation, and resulting either in large classes in the area schools or the need for some children to travel long distances to schools outside the area. This concentration of children was due to the settling of couples with young families simultaneously into new housing estates. In future more consideration might be paid to mixing age-groups on housing estates.

5. Secondary-school pupils are well provided for in the north and west districts of the City, but another secondary school is required to cater for the children living in the south and east districts. Assuming that:

(*a*) Separate provision (as advocated in the Education Act) will be made for primary and secondary education,

(*b*) Secondary education starts at 12,

(*c*) The school-leaving age is 15; then the new school will require a capacity for 650 pupils (equivalent to Stanley Road School) to meet the needs of the existing population. This figure allows for the fact that more room will be created for Worcester City children at the existing secondary schools by the building of secondary schools in the County. When the school-leaving age is raised to 16, the total accommodation throughout the City will need to cater for an extra 700 secondary-school pupils.

6. Full advantage should be taken of the wide scope for additional technical education to supply needed knowledge and skill in the City's industries and in the agriculture of the surrounding area. New premises are likely to be required for this purpose.

7. There is a need for organized adult education in the City. Plans for the provision of this and also of a County college for part-time 'continued' education should be made as soon as possible. Under the new Education Act, both are obligations of the Local Authority.

CHAPTER XI

ZONING AND SOCIAL GROUPING

This, the final chapter of the detailed survey of Worcester, brings together in terms of physical planning and land use most of the problems of location raised in earlier chapters. The key words are segregation and accessibility.

Official plans for zoning have hitherto paid most attention to the segregation of land to be used for housing, for commerce, and for manufacturing. Segregation is certainly important in cultivating amenities and avoiding nuisances, wastage of resources, and other social costs. Recommendations are made accordingly for the development in Worcester of a central zone, main and subsidiary factory zones (possibly including trading estates) and housing estates, and for the preservation of high-fertility land for agriculture.

It is, however, accessibility rather than segregation that requires pioneer study. The actual inconvenience, and the cost and time spent, in getting from home to work, shops, schools, clinics, clubs, parks, and entertainments, is not just a matter of transport facilities but of spacial relations. Physical plans should be designed to relate people's homes with the places people have or want to go to, so that the more frequent the need the more accessible the place meeting that need should be. And any survey such as this, which is a preliminary to planning, must measure the degree of frequency. Furthermore, accessibility varies with the capacity of the traveller: for example, a child cannot be expected to walk as far as an adult. These principles have come up in considering health facilities and amenities in Chapter VIII, shops in Chapter IX, and schools in Chapter X; they are also applicable to the more purely social activities considered in this chapter.

The actual distances economically possible in space or time, to be adopted as standards, depend on the density of the population. Shops, schools, clinics, clubs, and entertainments all require for *efficient operation (in terms of social as well as monetary cost) a certain amount of custom, or frequency of use, to support them. In the densely populated areas of towns, such custom can be found for infrequent or specialized needs even within a small distance. But in the countryside, with few houses per acre, a similar amount of custom merely for common needs can only be found within a wide radius; and for specialised needs the countryside will normally have to join its custom with that of a market or county town.*

In a city the size of Worcester, serving a wide country area outside its own boundaries, facilities fall into three ranks of pattern—clearly visible in the general map of shops (Fig. 28). (1) *Dispersal over the city for the frequent needs (e.g. food or primary schooling) of the townsfolk;* (2) *Grouping in neighbourhood centres for less frequent but common needs of the townsfolk;* (3) *Concentration in a main centre for the specialized and least frequent needs of the townsfolk and of the country folk too.*

In providing for social activity and the various uses of leisure time it is particularly important that premises should be suitably sited. Survey is therefore made in this chapter of the churches, clubs, and other organizations for group or social activity, indicating those for which central premises are required and those which fulfil a local and frequent need. The existing locations of club premises in the surburban neighbourhoods are given in Fig. 41. *Sites for their development within more coherent neighbourhood centres is recommended.*

§ 1. THE ZONING FOR INDUSTRY

THE main practical question is whether factories, especially new factories, shall be localized into one or a very few zones within the City or, admitting certain restrictions, allowed to be distributed almost anywhere. The subsidiary question is where precisely this localization and these restrictions should take place.

A few years ago, many actual town plans would, in a medium-size town like Worcester, have contemplated the strict localization of industry. One or two zones only would have been reserved for new factories. The arguments advanced in favour of this policy of segregating industries completely from housing, schools, main shops, public buildings, parks, and amenities would have pointed to the 'neighbourhood nuisance' of industries, to the economy of placing together factories that transfer goods, and to the diseconomy of mixing industrial and other transport moving at different speeds.

More recently, however, research (mainly social research) has thrown considerable doubt on the advantages of a complete industrial localization. There are distinct social costs involved in the segregation of home and working place:

(i) The time and money consumed by the worker in travelling long distances to work;

(ii) Inability to return home for the dinner break—hence further cost to the worker;

(iii) Increased congestion in traffic of the same sort, and discomfort in travel, particularly at times of peak load when work is starting or stopping;

(iv) Loss in a 'sense of community' if work is in one neighbourhood, home in another. A worker often has his or her interests geographically divided. Clubs and social groups suffer in their cohesion, and civic responsibility weakens;

(v) To the housing estate segregated from work and often just a dormitory there comes outwardly a certain uniform dullness, if houses upon houses of similar type are unbroken by larger and different premises. This outward uniformity of development may well have inward psychological repercussions.

The solution of the problem of industrial zoning probably lies in a compromise between complete segregation of industries and their 'peppering' over the whole area, on the following principles:

(i) Noxious industries giving rise to the neighbourhood nuisances listed in Table XIII, Chap. IV (though not necessarily all light or even heavy industries), should be segregated from houses, possibly into one main zone, to leeward of prevailing winds.

(ii) Certain suburban or 'neighbourhood' areas should be reserved for housing of various types, with the public and commercial buildings that are required at short distance from homes (especially schools, clinics, shops) in the neighbourhood centre.

(iii) Industries not creating nuisances can be sited between these neighbourhood areas, particularly if there are railways, waterways, or wide roads open to take their materials and products away from congested streets. These industrial zones might accommodate up to say 4,000–6,000 workers. If they consist of small or medium-size factories, these factories might be organized as trading estates grouped round services used in common.

(iv) The central area of the City should be free from industries and particularly devoted to shops, offices, specialized services, public buildings, and amenities.

Details of the organization of the central areas and of neighbourhood units will be taken up in § § 2 and 4.

Applying these principles to the case of Worcester industries and including now the subsidiary question of the precise sites involved, it will be seen from the map of land use (Fig. 25) that in outline the principles have to some extent applied themselves already. There has in recent times been an outcry against blind economic forces and the (no) policy of *laissez-faire*. Yet the economic phenomenon of rent which arises as a result of the scarcity of land of required site has *in general* distributed housing, commerce, public building, factories as needed. Since a department store or a speciality shop must have a street front in the middle of a town and a house or factory need not, the shop is prepared to pay a higher rent per square yard and thus get a priority for a central site. Maps that have been prepared* of the total assessed rateable value of each property in the City show the increases in land values as the centre of the City is approached. Properties similar in extent and type of buildings are definitely in higher grades of value at or near the City centre.

Looking broadly at the land use of Worcester, it can be seen that the central area is mainly devoted to shops, public buildings, entertainments, restaurants. Factories occupy a larger proportion of land in the subcentral and some of the suburban areas; and most of them satisfy principle (iii) in being next to railways, waterways, or open roads. There are factories along the three railway lines out of Worcester: the Blackpole belt on the Birmingham line (designated in earlier schemes as the main industrial zone); a belt along the Hereford line west of the Severn; and an area between the station and canal running along the line southward. There is a group of factories on the river docks. And there are factories at the outskirts of the town on or near the Birmingham main road and the London Road. These sites might well remain in industrial use.

It is not therefore necessary to resite the whole of Worcester's industries from scratch at great expense. But economic factors such as rent have certainly failed in many respects to ensure the four principles advanced above. And a single failure (e.g. permitting a smoky factory to stay in the centre of town) may spoil a great number of surrounding sites. Planning is, therefore, necessary in readjusting and modifying faults in the existing industrial siting. The outstanding faults that obtruded themselves in the survey are worth listing, together with recommendations for a positive policy that might be applicable.

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*By Worcester City Surveyor.

(i) Many factories still remain, largely owing to economic inertia, in the central area. They were built before transport facilities (including bicycles) allowed homes and workplaces to be dispersed; the canal, which may have caused some of the original siting, is no longer much used.

The transport of the products and materials of these centrally sited factories causes congestion in narrow streets that also have to take ordinary internal and through traffic (see Chap. V). In many cases their premises prevent the extension of the City Centre to the riverside (see Chap. VIII). The case for demolition here is strong.

(ii) Some factories, though not in the central area, are unsightly and spoil certain amenities in their neighbourhood that are important in attracting visitors. Examples are the old premises opposite the swimming-baths and extending south along the river.

(iii) Industries that are noxious by reason of smell, fumes, etc., such as foundries and tanning, are scattered through the City area instead of segregated from houses in a main industrial zone to leeward, i.e. (see Fig. 7) to north-east. It should offer rail or water access and have a wide open road clear of the centre of the City.

Another industry besides manufacturing may be faultily zoned under present circumstances. That industry is agriculture. The majority report of the Scott Committee on Land Utilization in Rural Areas puts the position strongly:* 'There is abundant evidence to prove that in the past little or no regard has been paid to agricultural considerations in selecting land for constructional development. Neither the quality of the land itself nor the effect on surrounding farms has been taken into account. Sites for development have been chosen from the point of view of the usual factors affecting location, for instance, accessibility of road and rail transport, availability of public utility services and suitability of land for building purposes, and, since the development value of a site far exceeds its value as agricultural land—even where it is of the highest agricultural quality—there has been nothing to hinder the developer from taking his choice. It is often the best agricultural land—level, well-drained stretches with good soil—which is most suitable and least expensive from the building point of view. . . . Moreover, holdings on the fringes of towns where development is most likely to take place, are often the most intensively cultivated, much of the land being devoted to market-gardening.'

Though land of high fertility is not necessarily sacred if its site value is exceptional, yet development should avoid fertile land if equally, or almost equally, suitable sites can be found elsewhere. For the guidance and control of developments, it is worth considering Fig. 57, on which the undeveloped land round Worcester has been shaded to show land of first-class *A* fertility. This assessment is based on research by experts at the Long Ashton Research Station, University of Bristol.

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*Ch. IV, par. 89, Cmd. 6378.

Inside the city boundary considerable land still undeveloped of *A* fertility is to be found west of the Severn, noticeably at the orchards around Lower Wick. Between these and the industrial development round the Bromyard Road and the Hereford railway, there is further land of *A* fertility. North, again, of the Hereford railway line there is a belt of *A* fertility stretching all the way to Hallow outside the City boundary. On the east side of the river high-fertility land occurs only in a few places close to the river just south and just north of the City boundary.

Many of these areas of high fertility are close to existing building development, and special care should be taken that building does not extend over them if almost equally suitable land for building is available elsewhere.

§ 2. THE ZONING AND LAND USE OF THE CENTRAL AREA

If Worcester is to attract visitors from its region, from the country generally, and from the world at large, as well as offer its citizens specialized central services, its central area must be fit for its purpose and cleared of unnecessary uses.

It is necessary to apply some order of priority to land use in such a central area.

1. A certain proportion of the area must be devoted *to open space*, in the widest sense of the word, for the following reasons:

(*a*) Streets in the centre are normally crowded by pedestrians at certain hours. Shoppers who are jostled unduly on narrow pavements may, next time, go elsewhere;

(*b*) Part of the attraction of a shopping and entertainment centre lies in pleasant open surroundings such as squares, precincts (see Fig. 88), and avenues provide;

(*c*) If shoppers and pleasure-seekers come and go by *public* conveyance, space must be reserved for loading and unloading stations;

(*d*) If shoppers and pleasure-seekers come and go by *private* conveyance, space must be reserved for parking places not too far from the shops and entertainment. (It may often be convenient for motorists to combine parking with some repair to their cars. This gives a high priority to garages—see later under 7*a*.)

2. The main functions of a town centre is to provide shops displaying wide variety of choice, particularly in all those articles not for day-to-day consumption, but only occasionally bought. Customers want

choice not only *within* such shops but also between shops. Hence space must be reserved for large department stores and also for a series of small speciality shops. It must be realized, too, that the centre of a town should provide all the *ordinary* day-to-day shopping needs of those living near its centre. It is a local neighbourhood as well as a town centre.

3. The next most important function of a modern town centre is to provide entertainment and recreation; space should be reserved for cinemas, theatres, concert-halls, a central library, museums.

4. Once a centre of occasional shopping and entertainment has been formed on which transport converges, other professional and social services occasionally required will follow suit in order to be near the traffic. Medical specialists, dentists, solicitors, will thus need space near the centre, and the same should be true of technical colleges, specialized clinics, hospital outpatients' departments. Since churches and chapels are used mainly on Sundays, proximity to (week-day) traffic is not so essential.

5. Ancillary to visits to shops, entertainment, and social services, are cafés and restaurants. Without such facilities shoppers and other visitors will not stay as long as they might, and may not come at all.

6. Further branches of commercial activity besides retailing that usually find a central site are wholesaling, and the headquarters of banking and of insurance offices. Further, the administration of the city itself needs a civic centre. The reason for this centralization is partly the converging public traffic, but partly also the need for close personal contact between heads of commercial organizations and between different administrative departments.

7. When the central zone is shared out among uses numbered 1–6, is there any room for manufacturing premises? The answer is that some few branches of manufacturing are economically and conveniently placed in the centre of industrial towns; that in the case of others it does not matter much one way or the other; but that in a third category central siting is harmful to some of the prior uses (1–6). These trades—useful, neutral, and harmful respectively—in a central site may be denoted 7*a*, 7*b*, and 7*c*.

7*a*. It is a positive advantage in catering for visits from the surrounding population to have garages at hand in the central area, where repairs to cars can be promptly carried out. Repair work to other property brought personally by the consumer (e.g. shoe and watch repair), personal services (periodically wanted) such as hair-dressing, and work requiring personal attendance such as bespoke tailoring, should be also provided near the centre of town for the advantage and attraction of the outlying population.

A further reason for the central location of certain businesses is that they cater for the common wants of the whole trading community. Jobbing printers are an instance.

7b. The great bulk of manufacture will be neutral as far as central or other sites go. But in view of the need for central siting of uses 1–*7a* and the limited total space available, 'neutral' manufacturers with no *special* case for central sites had better be prohibited or at least given a very low priority. This is especially true for factories occupying a wide floor space in relation to their output.

7c. Manufactures positively harmful in central sites are those that would spoil the prior uses given above under 1–*7a* including trades creating smell, much smoke, dust, noise, or requiring unsightly plant (Table XIII, Chap. IV). These nuisance factors would repel the shoppers and pleasure-seekers from surrounding areas, and might even to some extent spoil goods on display.

Applying these principles to the particular case of Worcester, it is first necessary to define what is to be the central area. At present the centre marked by the block of shops (Fig. 28) and public buildings spreads north and south along the main congested traffic artery of High Street, the Cross, and Foregate Street as far north as the Shire Hall. For minimum distances and for safety there is not a sufficient spread east and west. The narrow streets by the main artery are crowded with shoppers (see Figs. 89–91). From the standpoint of amenity it has already been suggested that the central area should include the river-front, that is each side of the eastern approach to the Bridge. South-westwards the centre could extend to the Cathedral, and north-westwards it would add to amenity if there were a clear approach along the river to Pitchcroft. This would give the open space accessible centrally that was advocated as an attraction to visitors. The area under discussion can be seen in Figs. 42, 50, 71, and 87.

The proposed westward extension of the present centre of the City's activities is *as a minimum* more important than an eastward extension of the present centre, say, to the canal. If this minimum definition of the central zone be accepted for immediate purposes, then it may not for the present be necessary to clear the group of factories just west of the canal. But it will be necessary to clear the factories, small warehouses, and workshops close to the east bank of the river from the Cathedral precincts north to Pitchcroft. This clearance will give the access from the City Centre to an open space recommended above. There will also be easy access over the Bridge to the walks and recreation grounds along the river in St. John's. Within this area the civic centre, including the Guildhall, police headquarters, and City offices, is likely to cover the section south of Broad Street. But north of Broad Street and west of Angel Place (the present bus station, see Fig. 92) there is room for a shopping centre possibly laid out as a 'precinct' (see Fig. 88). A new bus station might be built near by: Fig. 93 gives a possible basis for the design.

The minimum central zone thus defined is admittedly unsatisfactory, since it does not extend to the main railway station (Shrub Hill) and leaves the approach to the station a devious and narrow route through a manufacturing area—hardly an attraction to visitors coming by railway. Moreover, several of the factories that would remain close to the minimum centre are 'neighbourhood nuisances,' and include tanneries, foundries, and iron works. A reasonable City central zone would therefore extend eastward at least to the canal with an area projecting over the canal to the main station. These areas on either side of the canal appear in Figs. 70–4. From this zone all noxious factories and nuisances to the neighbourhood (and possibly all other factories) would be cleared.

§3. SOCIAL GROUPING

THE most important potential channels for developing a community feeling and encouraging voluntary grouping for social activities within neighbourhoods are the religious bodies and the various secular voluntary organizations.

The extent and use made of the existing provision through both these channels is surveyed in this section. Special attention is given to the provision of local centres of activity in the suburban districts. Where local centres exist, efforts have been made to assess their efficiency in meeting the needs of groups of people with common interests, and in developing neighbourhood social groups.

In making this assessment and, later, when considering generally the question of neighbourhood development and the necessary components of a neighbourhood centre, the five areas of the City used throughout this Survey again provide a convenient basis for analysis.

(*a*) RELIGIOUS INSTITUTIONS AND ACTIVITIES*

Fig. 40 shows the situation of all existing churches, chapels, mission-halls, and other places of worship in the City, distinguishing between premises of the Church of England and other denominations. The map brings out the concentration of places of worship within the Central Area (Area 1). These comprise the following churches:

The Cathedral
12 Church of England churches
6 Nonconformist churches or chapels
1 Roman Catholic church

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*Acknowledgment is due to the Church leaders who gave comprehensive replies to the special questionnaire circulated to them.

and places of worship of:

The Society of Friends
Hebrew Congregation
Christian Scientists
Christadelphians
Plymouth Brethren
Jehovah's Witnesses
Spiritualists
Seventh Day Adventists
Zionists
The Salvation Army

Contrasted with the Central, the number of places of worship in the suburban Areas is only small; Area 2 has four; Area 3, five; Area 4, six; Area 5, four. These places are Church of England (represented in all areas), and either Baptist, or Methodist.

In the Central Area (Area 1) the Church of England churches vary considerably both in the type of service held and the main functions which they perform. The Cathedral, of course, has an exceptional position: not only do the Free Churches feel that they 'have a stake in it,' but on special service days observed nationally, and on other special occasions, it attracts people of all denominations. Also, for visitors and sightseers to the City, it forms one of the principal attractions. Many of the central churches no longer have so large a congregation as in the past, owing to slum clearance and the general exodus from the City centre to the suburbs, and some parishes have been amalgamated. For example, one church is now used solely as the Diocesan Registry, another is used as a club room, and a third (though still holding one Communion service monthly) is mainly given over at present to the Y.M.C.A. St. Andrew's Church, which is in a bad state of repair, is no longer used for church purposes, but occupies a fine site on the land proposed for the new civic centre, and is worth preserving for its slender and distinctive spire seen in Fig. 42. All Saints' Church occupies a good position for a central City church, well placed to serve visitors to the City; but the need in this parish is for a church hall suitable for social activities connected with the church. St. Nicholas Church on the Cross has about 400 worshippers each Sunday, drawn from all parts of the City, many of them being people who used to live near the centre. The Church Institute attached to St. Swithin's Church is equipped with a stage, good floor for dancing, and several small committee rooms, and provides facilities not only for devotional meetings and social gatherings but for dramatic and orchestral societies.

St. Mary's, on the border-line between Areas 1 and 3, serves more particularly its own neighbourhood. Its church hall is used for parochial purposes such as a boys' club, women's meetings, and a Sunday-school for kindergarten children, drawn mainly from St. Mary's Infants' School.

The Methodist, Baptist, Congregational, Lady Huntingdon's Connexion, and Presbyterian denominations in the Central Area (as also most of the smaller religious bodies) have their own halls which provide facilities for the classes, clubs, and social activities connected with their particular organization. Where there is only one place of worship to represent a denomination, the congregation is often drawn from a very wide area—several churches stated that they drew their congregations from an area extending as far as nine or ten miles. At a number of these churches and meeting-places attendance was curtailed during wartime owing to restricted transport services. The question of convenient public transport on Sundays is clearly more important to members of scattered religious organizations than to members of the Church of England, who in most cases have a church within walking distance of their home.

During the house-to-house inquiry, note was made (to test how far there was interest in religion) of the number of houses visited where any member either regularly or occasionally attended a place of worship, or where children attended a Sunday-school. Out of the total of 932 households visited, 585 (i.e. 63%) fulfilled one or other of these conditions. Taking the Areas separately, Area 1 showed the highest percentage (67%) and Area 5 the lowest percentage (57%).

The name of the place of worship attended was obtained in each case. Results showed that where a Church of England church is conveniently situated in the centre of a housing district, it was attended by at least one member of over half the households with some religious interest living in that district. From this, it would appear that the Church of England is in a position to establish locally its own neighbourhood group among its members. It could not expect to incorporate all 'live' members of the Church of England resident within the neighbourhood, as other influences, such as habit or personal tastes for high or low services, will attract people to churches in other parts. Except for Nonconformist churches with larger membership, no other religious organization can, however, so easily develop its own local 'neighbourhood' social groups. Most of the other denominations are only numerically strong enough to justify central premises. In every suburban district it was found that, on account of the diversity of religious belief in any one district, and by reason of personal preference for a particular church within one denomination (e.g. the Church of England), a considerable number of persons travel to places of worship in other parts of the City, usually to the centre. For example, in Area 4, where interest in religion was evidenced in 140 households, as many as 27 different places of worship were attended. These were divided between:

Church of England	13
Baptist	3
Methodist	3
Roman Catholic	1
Lady Huntingdon's Connexion	1
Congregational	1
Undenominational	1
The Society of Friends	1
The Salvation Army	1
Elim Chapel	1
Plymouth Brethren	1
	27

In Worcester, as the need has arisen with new housing development in suburban areas, the Baptist and Methodist Churches, as well as the Church of England, have established either new churches or mission-halls from which both the religious and social needs of their members can be served locally. In the suburban areas, the Church and mission-halls very often provide the only facilities, apart from schools, for any form of communal social activity. In some cases they are loaned or hired out to groups of people for secular purposes; at Brickfields (Area 4) the Baptist Mission Hall and at Claines (Area 3) the Church Hall belonging to St. John's, Claines, are used for maternity and child-welfare clinics (one day per week). Many of the halls, both in the suburbs and central districts, are lent to the L.E.A. for the service of school meals.

In the past the Church took an important lead in the establishment of clubs (not always primarily concerned with religious matters) for all sections of the community, but particularly for young people, through its first link of Sunday-school, and later through youth fellowships and its own units of national organizations such as Scouts and Guides. Now, however, the number and scope of secular voluntary social organizations have greatly increased, and the State itself has come to realize the need to grant more adequate provision for organized leisure-time activities, thus making the demands upon the Church in these respects less urgent. The extent to which the Church still provides facilities for social clubs and recreational activities will be described in the next section.

(*b*) SOCIAL CLUBS AND OTHER GROUP ACTIVITY

Apart from religious activities, there are many facilities for voluntary grouping and the development of centres for local community life. By means of a questionnaire circulated to all clubs and societies within Worcester it has been possible to obtain a general picture of the number and type of voluntary organizations existing within the City, the size of their membership, and the scope of their activities. These, at the outset, have been divided into two classes: (1) organizations drawing their members from all parts of the City to premises (either owned or hired for the purpose) in the centre, and (2) organizations or clubs formed to meet the common needs and interests of groups of people living in the same locality or neighbourhood.

Many organizations of the first type, for instance professional and business clubs, are self-formed and self-supporting, and provision for their development is not the concern of the physical planner. But as many as sixteen different centrally located clubs stated that the premises either loaned or used by them at present were inadequate for their purpose, and requests were made for the Local Authority to make provision in this respect. The premises mainly used by societies and clubs holding meetings in the Central Area of the City are:

The Co-operative Hall (commandeered during wartime)
Public Hall, Old Cornmarket
Victoria Institute
Public Library and Art Gallery
Y.W.C.A.
Friends' Meeting House
Theatre Royal
Church halls and school halls
Cafés

In most cases the difficulty of finding suitable premises, or in some cases any at all, had handicapped the activities and development of the organization. These organizations, including youth and similar clubs, required premises not only for business meetings and classes but for social gatherings and other recreational activities. Drama, operatic, and choral societies lacked a good hall and stage facilities. The sports clubs on the whole appear to be adequately catered for, though it would be desirable to have more public playing-grounds laid out for the use of the numerous football and cricket clubs. Works clubs can also be considered of this central type, as they do not serve a particular locality of the City.

In the suburbs, there is a chance for development of social, recreative, and educational facilities through organizations of the local type, by good siting and layout of premises, playing-fields, etc., and by securing good leadership. This development can be carried further in most towns.

A detailed examination of club activities in Worcester suburban districts should therefore be of wide value. Areas 2, 3, 4, and 5 are considered separately. This account reproduces the survey of the position *as it was early in* 1945. Fig. 41 shows the location of the premises made use of.

In Area 2, the normal Church organizations with a social side, such as youth fellowships, mothers' unions, guild meetings, together with branches of the Girl Guides and Boys' Brigade, are catered for by the two Church of England churches and the Bromyard Road Methodist Church. Apart from these, the chief social activities in this area centre round the Youth Centre at the Christopher Whitehead School. The total membership there is over 200; it provides for most sport and social youth activities, has a junior evening institute, first aid, and home nursing courses.

Area 3 is less well served for youth and other social clubs, as there is no senior school situated in the area, nor other suitable premises except in the northern part of the district, where there is a good parish hall (belonging to St. John's, Claines), which is in regular use for community activities. Here facilities are provided for socials, dances, clubs, concerts, church fellowship meetings, Guides, Brownies, Cubs, etc., and also for the maternity and child-welfare clinic one day weekly. The premises, though good, are too small to meet all the demands for their use. The other church halls of the area are not used for club activities.

The Samuel Southall School with youth centre and junior evening institute (total membership approaching 200) attracts members from a wide area of the City. It is situated on the border-line of Areas 3 and 4. In Area 4, to the north-east, St. Barnabas Church Hall caters for Scouts, Cubs, mothers' meetings, and the St. Barnabas Men's Club. The Rainbow Hill Ex-Servicemen's Club and the Warworkers' Club are nearby. But there are no premises in the whole of this district available and suitable for a community centre, and to meet this need the Education Department, prior to the outbreak of war, were considering plans for the erection of premises. The Gorse Hill School has in the meantime filled the gap and has been used (in addition to Sunday-school) for play-centre in the evening up to 6.30, junior club for children up to 14, youth club, adult groups, Guides, Brownies.

The lack of suitable club and community premises is equally evident in Area 5. In this Area, towards the centre of the City, the Stanley Road School has a large youth centre and junior evening institute facilities; and the church hall of New St. Martin's, London Road, is sometimes let to outside organizations such as Girl Guides, badminton clubs, or for occasional dances or socials, besides being used for its own church clubs. No other premises suitable for general club purposes are available throughout the Area.

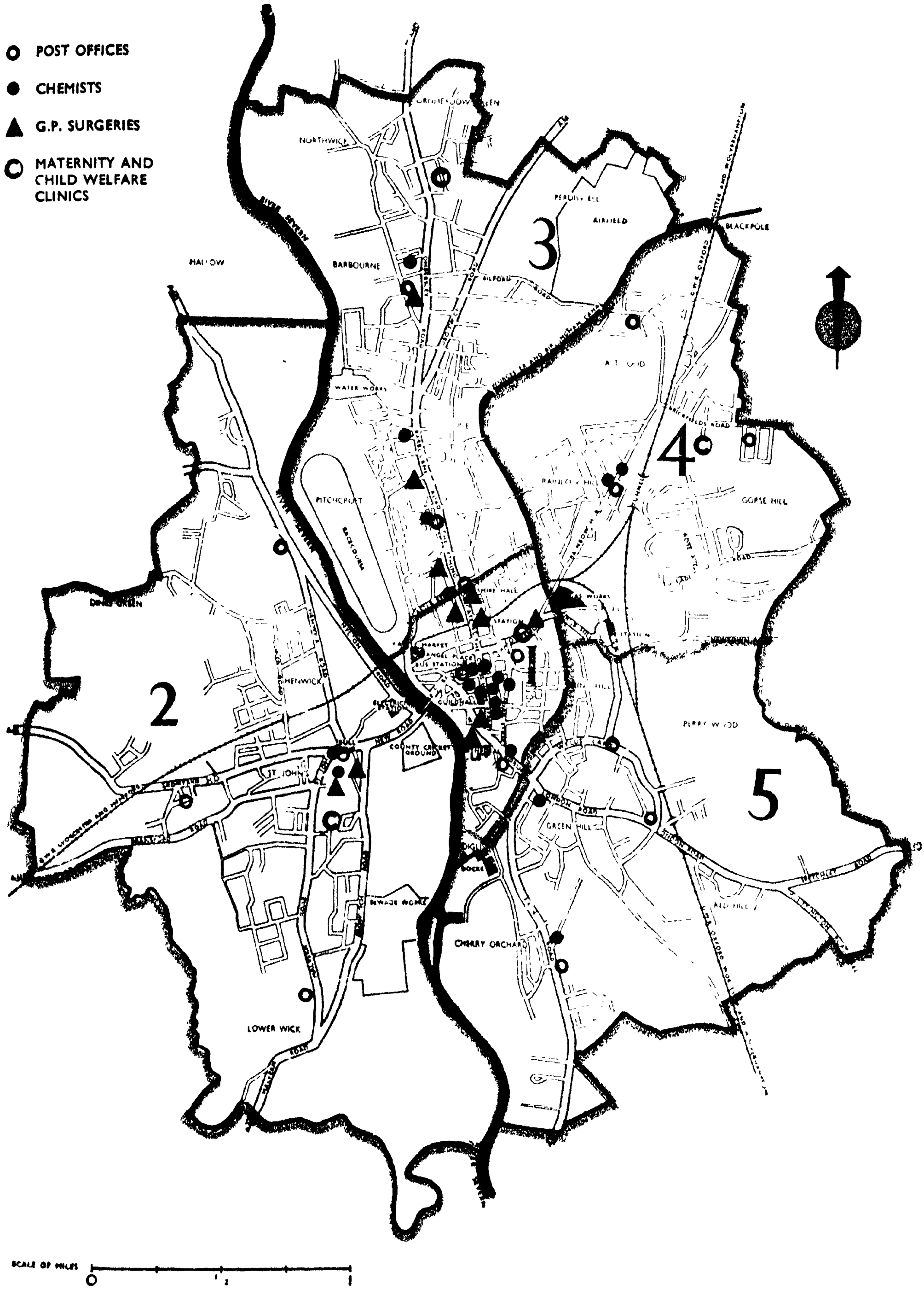

Fig. 38. Distribution of CLINICS, SURGERIES, CHEMISTS, *and* POST OFFICES, *on a street plan background. This shows the accessibility of health and social insurance centres. At the post offices cash benefits are obtained.*

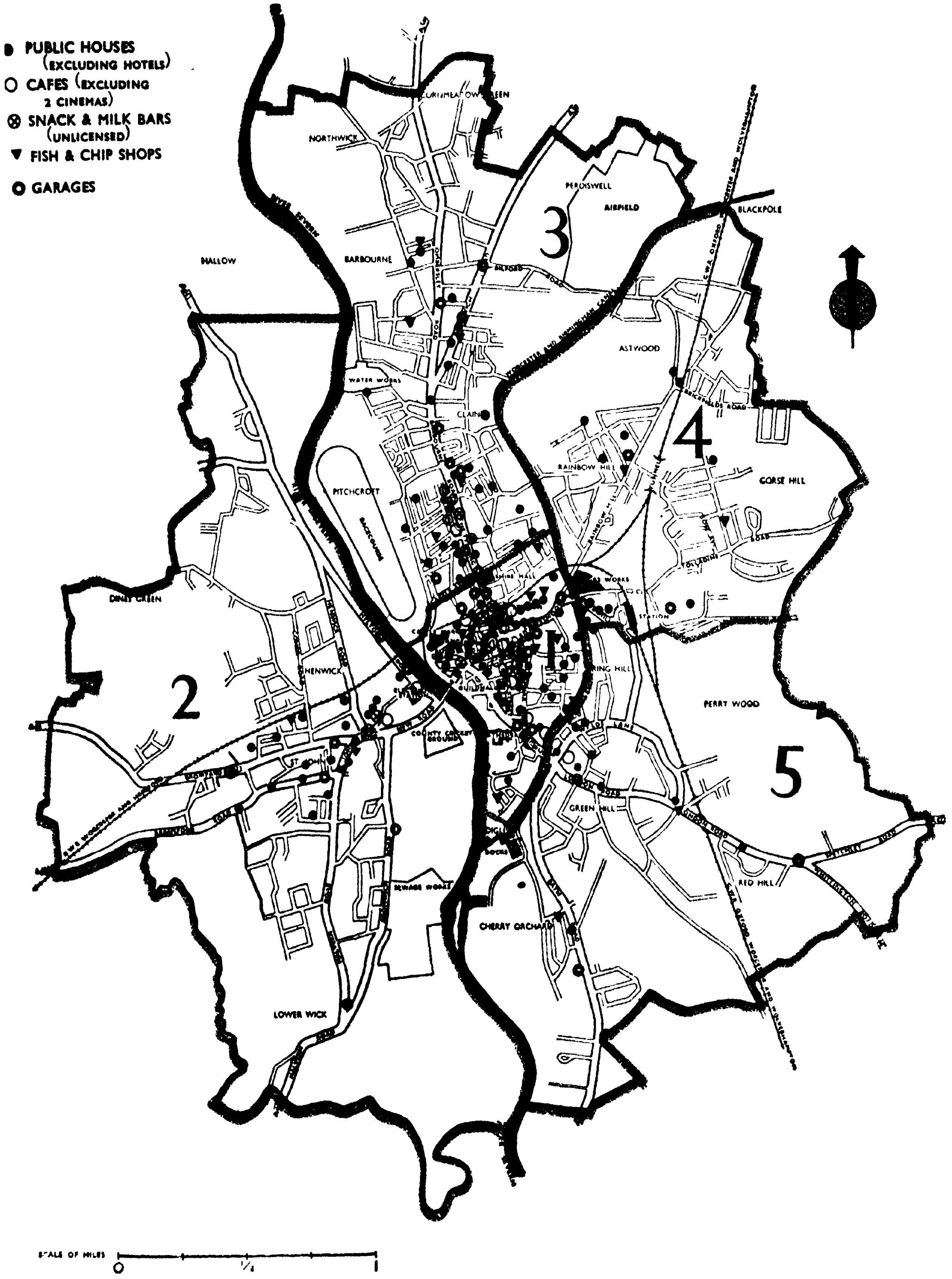

Fig. 39. *Distribution of* PUBLIC HOUSES, CAFÉS, FISH-AND-CHIP SHOPS, MILK BARS, *and* GARAGES *on a street plan background.*

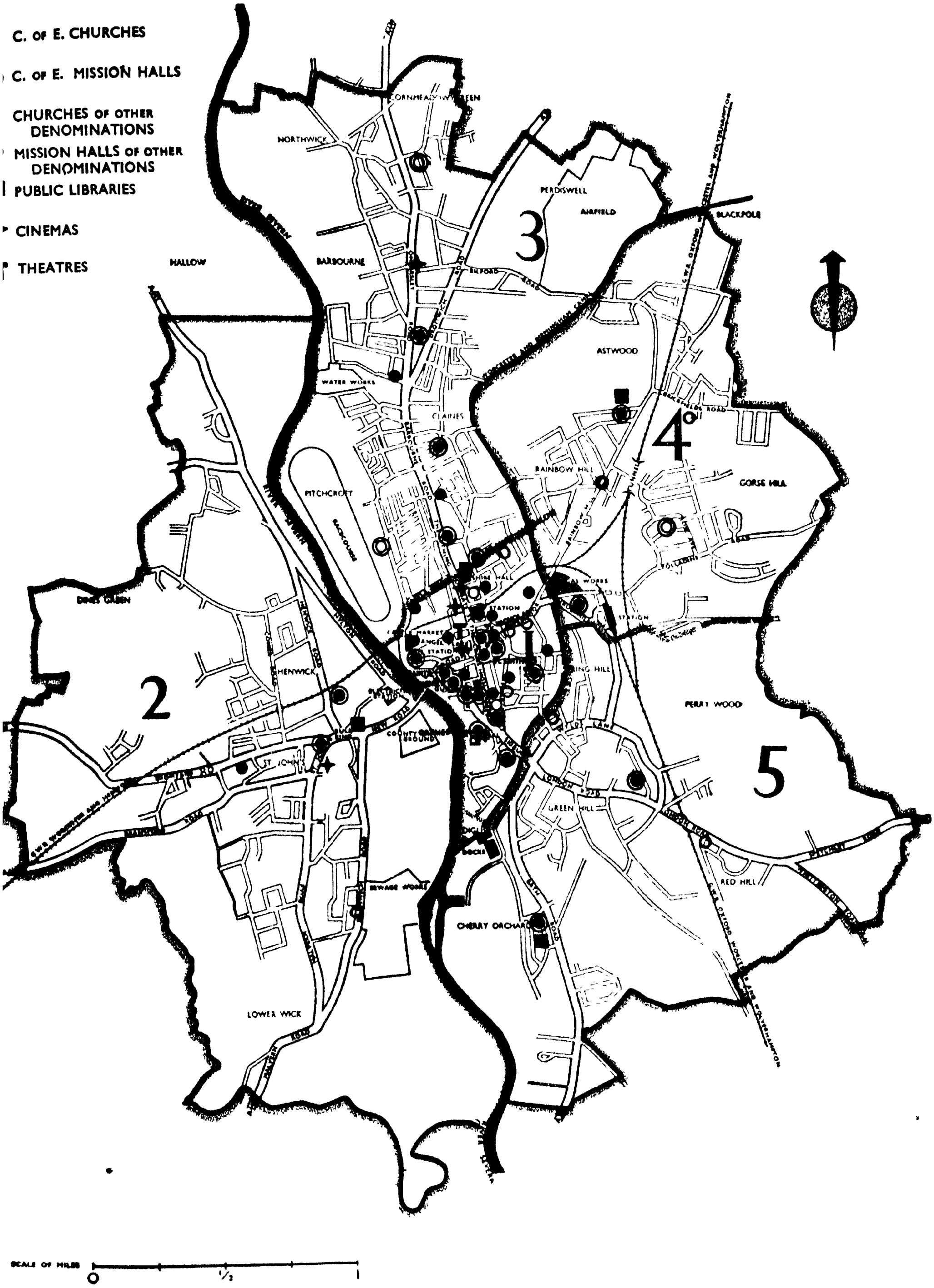

Fig. 40. *Distribution of* CHURCHES, PUBLIC LIBRARIES, CINEMAS, *and the* THEATRE *on a street plan background.*

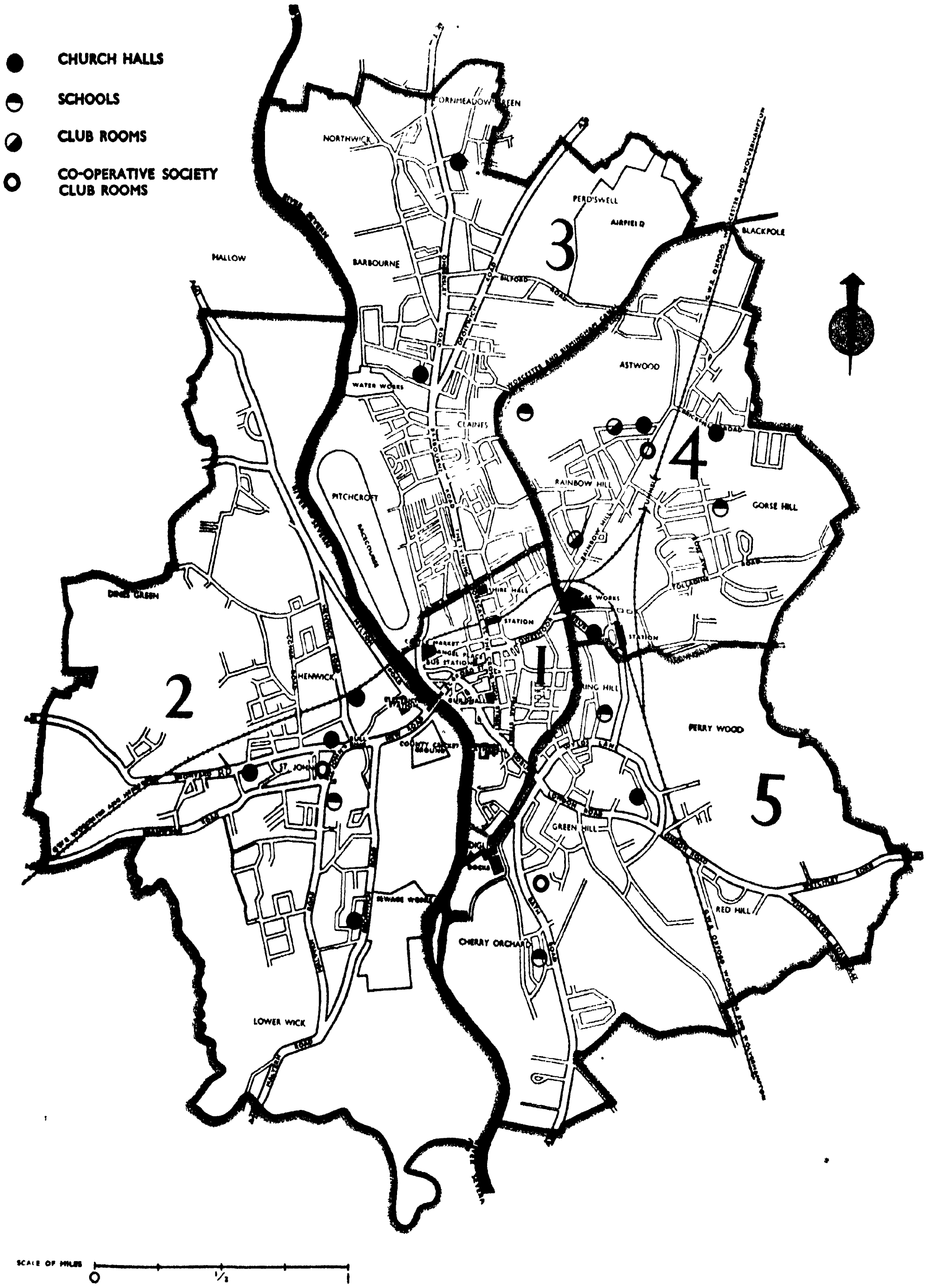

Fig. 41. CLUB PREMISES IN THE SUBURBS *on a street plan background.*

The Worcester Co-operative Society has club facilities over its own shop premises in all the four suburban areas. They are used by Women's Co-operative Guild meetings and children's classes.

(*c*) GENERAL SURVEY OF USE OF LEISURE TIME

Apart from participating in the activities of Church or voluntary organizations, leisure time is occupied by visits to the cinema, public house, parks, etc., by reading, or by pursuing hobbies, such as gardening. Table I summarizes answers to questions during the house-to-house inquiry, and shows for each area the percentage of households visited in which some member participated in any of the leisure-time activities listed.

Places available for leisure away from home are mapped as follows:

Fig. 1 (*Frontispiece*). Parks, playgrounds, allotments
Fig. 39. Public houses and restaurants, cafés, milk bars, fish-and-chip shops
Fig. 40. Churches and mission-halls, cinemas, theatre, public libraries
Fig. 41. Club premises in the suburbs

TABLE I

NUMBER AND PROPORTION OF HOUSEHOLDS VISITED IN SAMPLE INQUIRY WHERE ANY MEMBER CLAIMED PARTICIPATION IN LISTED ACTIVITIES

Total number of houses visited	Area 1		Area 2		Area 3		Area 4		Area 5		Total	
	90		212		242		222		166		932	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Library	36	40	102	48	128	53	89	40	79	48	434	47
Youth clubs ..	1	†	26	12	24	10	20	9	15	9	86	9
Men's clubs ..	7	8	24	11	18	7	17	8	11	7	77	8
Women's clubs ..	1	†	15	7	18	7	7	3	8	5	49	5
Place of worship ..	60	67	140	66	151	62	140	63	94	57	585	63
Parks	62	69	136	64	145	60	105	47	80	48	528	57
Sports grounds ..	30	33	66	31	45	19	45	20	39	24	225	24
Cinema	71	79	176	83	196	81	176	79	117	71	736	79
Dance hall	11	12	24	11	44	18	45	20	22	13	146	16
Public house* ..	45	50	70	33	96	40	71	32	74	45	356	38

*The figure here is not accurate but may be taken as a minimum, since many householders did not wish to answer this question.

†Negligible.

The results for each Area show the same tendencies. They illustrate the outstanding popularity of the cinema, even in those districts where considerable travel is involved. Parks also rank high in popularity. The figure for visits to the public house would have been higher if householders had not in many cases considered such a visit by any member of their household as not respectable and sometimes refused to answer the question.

It can be seen that the proportion making use of clubs is low, and there should therefore be wide scope for their development. Good premises, with good equipment and grounds, suitably situated, should be a first step in this direction.

As shown earlier in this section, none of the Areas, either suburban or central, has facilities for the establishment of an efficient and attractive 'community centre.' 'Community centres exist so that neighbours can come together on an equal footing to enjoy social, recreative, and educational activities, either as members of groups following particular hobbies and pursuits, or on the basis of their common needs and interests as human beings living in the same locality. They should therefore be so conducted as to be open to all members of the community, even though in practice all may not actually use them. . . . [There is] a vast variety of interests for which the community can and should cater. Music, drama, and choral societies can rehearse and produce there; the allotments association, the rabbit club, the savings group, the film society, and the British Legion can hold business meetings and social functions. There, too, will be the common-room, the games room, and the canteen to which members can resort to read, to play games, or chat over a meal; and here we would emphasize our conviction that those who are responsible for planning the activities of a community centre should not forget the needs of the less gregarious person who, though temperamentally indisposed to join clubs and societies, will be glad to drop in to read, chat, or even "just sit." '*

Plans for the provision of community centres should site and design them in such a way that they inevitably form an integral part of the neighbourhood development.

§4. NEIGHBOURHOOD DEVELOPMENT

DEFINITE patterns of location become clear from the survey of religious and social activities in the previous section, taken in conjunction with the survey of amenities and of the health and retail services in earlier chapters. Certain activities appear to take place in the main area of the City; other activities are completely dispersed; while a third set of activities show a compromise in their pattern—they take place in several subsidiary centres within the City.

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*Ministry of Education Booklet, 1944, 'Community Centres.'

TABLE II

ASSIGNMENT OF SERVICES ACCORDING TO PATTERN OF LOCATION: GENERAL SCHEME BASED ON ACTUAL DISTRIBUTION IN WORCESTER

Pattern of Location	I Dispersed	II Neighbourhood Centre or Sub-centre	III Main Centre
Optimum Distance	Within ¼ mile of all houses	Within ½ mile of all houses	—
Population Included (approx.)	—	8,000 to 12,000	City 60,000 Countryside 60,000
		Most services of Pattern I repeated	Most services of Patterns I and II repeated
Catering and Retailing, Chap. IX	Public houses Fish-and-chip shops *Frequent Wants* (esp. food) General grocers Bakers Butchers Chemists → Newsagents Tobacconists	Cafés or Milk bars Supper rooms *Periodic Wants and Common Requirements* Drapers Outfitters, etc. *Service Shops* Garages Electrical engineers Hairdressers Repairs, e.g. shoes	Restaurants Hotels *Luxury and Speciality Goods* Clothing Furnishing Miscellaneous
Health and Welfare, Chap. VIII, § 1	—	General practitioner Consulting-rooms and surgeries Child-welfare, Pre-natal, Maternity } Clinics Play-centres	Hospital, general and specialized Dentists Specialists Health centre
Public Utilities, Chap. VIII, § 2	Letter-boxes Telephone kiosks	Branch post offices (for pension payments, etc.)	Main post office
Amenities, Chap. VIII, § 3	Children's playgrounds Allotments	Cinemas → Lending libraries Reading-rooms Parks or adult recreation	Theatre Public hall (dances) Lending library Public baths
Education, Chap. X	Nursery schools Primary schools	Adult classes Secondary schools	Technical college Arts and crafts school
Social Grouping, Chap. XI	Churches and chapels →	Club-rooms Community centres	

→ = alternative assignment.

Table II is an attempt to specify which particular activities fall into each of the three patterns. The activities are classified under the headings used for chapters or sections of chapters in this Survey: Retail Distribution (including Catering), Health, Public Utilities, Amenities, Education, and Social Grouping. Within each class the table assigns certain activities to each of the three patterns. Where assignment to pattern is doubtful the activity is placed in the most likely column, with an arrow pointing to the next most likely. This assignment is partly based on the actual distribution of premises found in Worcester and elsewhere;* but it is also dictated by certain principles or standards, thus presenting an ideal scheme that is, however, also practicable.

Assignment of an activity or service to any one pattern depends in principle mainly on the relative frequency or infrequency of the need for that service. The degree of frequency is determined by the number of persons requiring the service and the number of times those persons require it. Thus the services of a general practitioner are relatively frequently needed, because he offers his services to all persons for most complaints. His consulting-rooms should therefore be more dispersed than those of specialists in children's ailments or in some particular kind of ailment. In short, the more specialized a market, the wider the area necessary to collect a sufficient demand. Specialists and special services should tend to be more concentrated and to serve a wider area than services required generally and frequently. Only by taking in a wider area can a sufficient number of infrequent cases be collected to employ fully the appropriate specialized services.

The relation of frequency and generality of need to location pattern is more complicated for retail distribution, and this has been discussed in Chap. IX in analysing what types of shop require to be (and could economically be) dispersed, placed in suburban centres, or placed in the main centre. Detailed maps were given of dispersed shops and the area within a quarter of a mile of them. It was clearly seen here that the main central area also contained shops of the dispersed type for consumers themselves living in the central area.

In general, services of dispersed pattern are repeated in the neighbourhood centre, and services of dispersed and neighbourhood-centre pattern are repeated in the main centre.

This repetition occurs because some people live in the central area, and also because people alternate between centre and suburb in satisfying some of their wants. This alternation does not apply to schools, clinics, general practitioners, etc.

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*See Figs. 38–41. For distribution in a rural area, see *English County*, a survey of Herefordshire, p. 214: The West Midland Group for Post-war Reconstruction and Planning.

A secondary principle determining pattern of location is cost, danger, and difficulty of travel or transport. Very young children must clearly be nearer their school and playgrounds than older children. If goods are delivered (like milk and coal) by vehicles, the depots need not be dispersed. This principle of transport also operates to disperse repair shops and fish-and-chip shops (as against cafés and milk bars), since goods have to be carried home. If transport facilities are available, e.g. buses to the cinema, patrons may go, fairly frequently, far afield.

A third principle, of which the cinema is also an example, is that premises may have to be on a large scale in order to render efficient service. They must therefore be concentrated so as to have a large market.

The main practical problem arises over the subsidiary neighbourhood centre. Within a city of the size of Worcester, such centres are advocated for the sake of a more effective community life. It is thought that a sense of community is lost when the number of persons in any group exceeds ten to twelve thousand, and when the area of land covered is such that many of them are more than half a mile from the centre of the area.* Applied to Worcester, these standards involve a division of the total population and area into at least five parts. Five distinct major areas have, in fact, been used throughout this Survey, and they may be considered as a starting-point for practical discussion.

Once the various services that are to be concentrated have been settled by custom or principle, it follows that they should most of them be concentrated together at the same single centre or sub-centre for a given area. For clearly it reduces travelling cost and time if the consumer can find a whole range of services in one particular place, and can purchase a wide variety of goods and service in one trip from home.†

The main centre of Worcester has already been delineated in § 2, but obviously it is also important to settle where exactly the suburban or neighbourhood centres should be developed.

In this task the series of maps (Figs. 38–41) are of great practical value, since they exhibit the actual location within the four suburban areas of the post offices, clinics, cinemas, cafés, garages, club-rooms, and other facilities which Table I suggests are properly assigned to neighbourhood centres.

Study of the four maps and Fig. 28 will show that in Area 2 (west of the river) a distinct centre is already formed in St. John's and the Bull

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*Though a half-mile radius for a neighbourhood is accepted here as a basis, there are several reasons for reducing this distance possibly to a quarter-mile and thus eliminating the dispersed shops, etc. The reasons include the possibility of district economy in other services, including disposal of waste and sewage. In Ch. XII some examples are given of redevelopment on these lines.

†A sketch for a complete neighbourhood *centre* is given in Fig. 86.

Ring by the presence of a cinema, a City branch library, a café, a milk bar, and a post office. Two primary schools and three garages are in the vicinity.

No other major area shows a similar distinctive centre actually in operation. In Area 3 there is a central shopping stretch along the Tything and Barbourne Road, with a post office, a milk bar, a café, and several garages. A centre also appears in Ombersley Road, where there is a post office, a cinema, and a variety of shops (including fish-and-chips), and a primary school close by.

Without going into further detailed evidence, which appears clearly from the series of maps (Figs. 38–41), the centres or nuclei of centres to be found in each of the four suburban areas can be tabulated. They are closely correlated with the shopping centres described in Chap. IX, § 2, and mapped in Fig. 28.

TABLE III

APPARENT CENTRES IN SUBURBAN AREAS

	Chief centre	Sub-centres
Area 2 (St. John's)	St. John's, Bull Ring	—
Area 3 (Barbourne and Claines)	Tything and Barbourne Road 'stretch'	Ombersley Road around *A* on Fig. 28
Area 4 (Rainbow Hill and Tolladine)	(Lowesmoor in Area 1 acts as shopping centre)	Astwood Road around *B* on Fig. 28 Rose Avenue (*C* on Fig. 28)
Area 5 (Spring Hill, Cherry Orchard, and London Road)	(Sidbury, mainly in Area 1, acts as shopping centre)	Bath Road at Cherry Orchard (*D* on Fig. 28) London Road around *E* on Fig. 28

From the standpoint of social grouping it would appear simplest to develop these neighbourhood centres and sub-centres further. On the other hand, a more radical redevelopment of neighbourhoods and their centres might be planned as mapped diagrammatically in Fig. 57. Wherever the site of the centre, premises of clubs, clinics, etc., and new shops should be concentrated there, and a general 'community centre' or 'social centre' building also established at the main focal point.

§ 5. RECOMMENDATIONS

1. NOXIOUS industries giving rise to the neighbourhood nuisances listed in Table XIII of Chap. IV, though not necessarily all light or even heavy industries, should be segregated from houses, possibly into one main zone, to leeward of prevailing winds.

2. Certain suburban or 'neighbourhood' areas should be reserved for housing of various types, with the public and commercial buildings that are required at short distance from homes (especially schools, clinics, shops) in the neighbourhood centre.

3. Industries not creating nuisances can be sited between these neighbourhood areas, particularly if there are railways, waterways, or wide roads open to take their materials and products away from congested streets. These industrial zones might accommodate up to, say, 4,000–6,000 workers. If they consist of small or medium-size factories, these factories might be organized as trading estates grouped round services used in common.

4. The central area of the City should be free from industries and particularly devoted to shops, offices, specialized services, public buildings, and amenities.

5. The zoning policy recommended in 1–4 does not involve any radical change in the layout of Worcester, but factories in the central area or spoiling amenities elsewhere should be cleared; and there are noxious factories that should be moved to a main industrial zone.

6. Special care should be exercised that building does not extend over areas of high agricultural fertility within or just outside the City boundary if almost equally suitable land for building is available elsewhere.

7. The central zone of the City should, as a minimum, be extended westward to the river front and factories cleared accordingly. Space should be reserved in this extension for civic and shopping centres.

8. Beyond the minimum plan, the central zone might extend eastward to the canal and include a more attractive and convenient approach to Shrub Hill Station.

9. Community centres catering for a wide variety of interests should be established, at least in each of the four major suburban areas of the City. In the central area provision should also be made for club activities and for central permanent offices of the larger social organizations having several branches.

10. The community centres should (together with facilities for a variety of other services listed in detail in Table II) form part of the neighbourhood centres recommended under 2. The present site of the neighbourhood centre in each of the suburban areas of Worcester is discussed in the text of this chapter. In some areas additional sub-centres with more limited facilities are advised. But alternative sites in a more complete scheme of redevelopment are put forward in the following chapter.

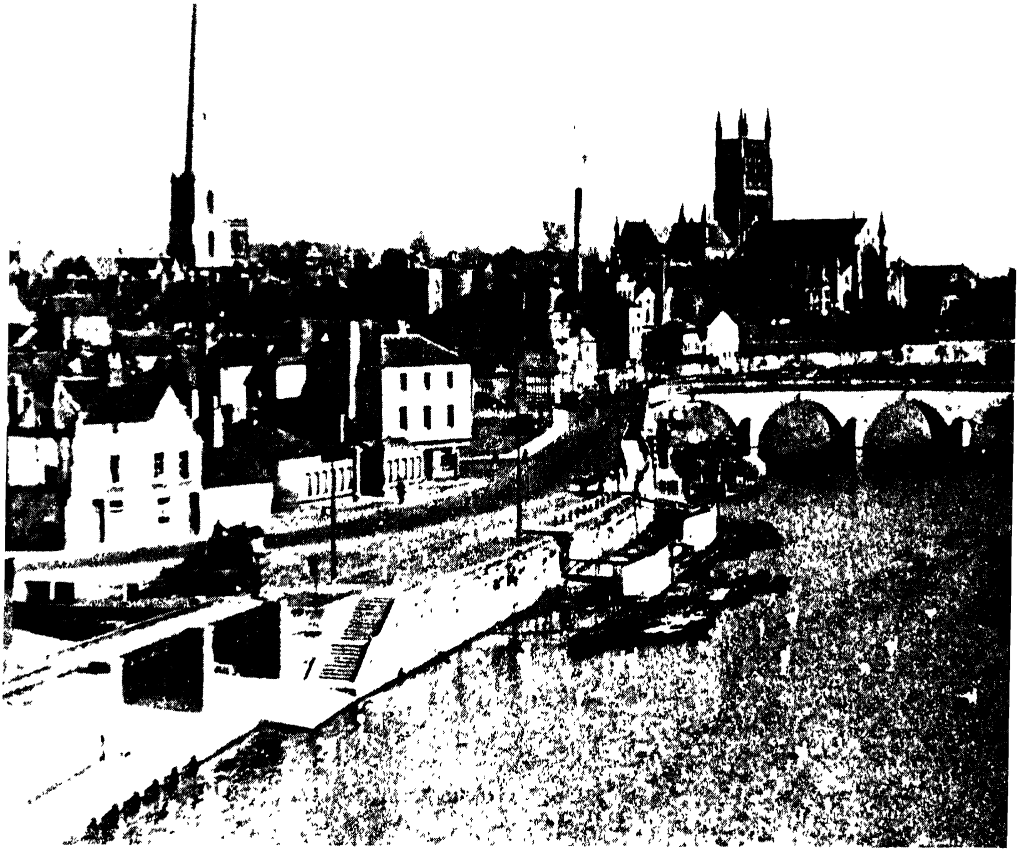

Fig. 42. River and Skyline. The view of Worcester meeting the traveller from Hereford as the train crosses the Severn. The slender spire in the foreground is St. Andrew's, the tower to the left All Hallows. Factories and warehouses appear between Cathedral and Bridge. The Cattle Market is to the left just outside the picture.

CHAPTER XII

FROM SURVEY TO REDEVELOPMENT

Hitherto each chapter has been concerned with a survey of the facts about one particular element of the environment, life and activities of Worcester. The survey, however, as our sub-title indicates, is a survey preparatory to the practical purposes of planning. *Accordingly, recommendations arising naturally out of the investigation were given at the end of most chapters, and in this final chapter some concrete illustrations are presented of feasible plans together with the local background necessary to their understanding.* **These plans are not official,** *but are given to demonstrate a method of redevelopment that can be used as an outcome of the work of the survey.*

Fig. 43. The Malvern Range from the British Camp. The Worcester plain is discernible over the ridge to the right.

Survey should be a continuing process in the life of a community, a stocktaking of resources and conditions that allows the citizen to have a comprehensive understanding of the life and activity in which he participates. After this stocktaking should come revaluation of current practices and conditions in the light of new techniques, material, and cultural standards. And from this revaluation should result the physical plan for redevelopment—a plan determined by the relation (in terms of prevailing economic expediency) of the available resources to the desired standards of living. Finally the plan becomes, through central or local legislation, the responsibility of the administrator and is translated into policy and fact.*

As a logical conclusion, this chapter thus briefly relates the Survey to the later processes of planning and implementation, and illustrates in physical terms the recommendations for redevelopment that have arisen from analysis of the existing situation.

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*Among publications that have put forward new standards or have otherwise helped in revaluation and redevelopment, the following may be cited:

Ove N. Arup: 'Memorandum on Box Frame Construction,' 1945.

British Standards Institution: 'Codes of Practice for Building '

H. B. Escritt: *Regional Planning*, 1943.

J. H. Forshaw and Sir Patrick Abercrombie: *County of London Plan*, 1943.

German Roads Delegation (Memorandum), 1937.

Alvin H. Hansen and Harvey Perloff: *State and Local Finance in the National Economy*, 1945.

H.M. Stationery Office: 'Post-war Building Studies;' 'Design of Dwellings,' 1944, 'Report on the Severn Barrage Scheme,' 1945; 'Royal Commission on the Distribution of the Industrial Population,' 1940.

E. C. Kent and F. J. Samuely: 'A Method of Comparative Analysis,' *Architect's Journal*, Vol. 100, No. 2585, 1944.

I. R. M. McCallum (Ed.): *Physical Planning*, 1945.

Lewis Mumford: *Culture of Cities*, 1938; *Condition of Man*, 1944.

National Association of Cemetery and Crematorium Superintendents: 'Memorandum on Planning Post-war Reform in the Disposition of the Dead,' 1944.

Dr. C. S. Orwin: *Speed the Plough*, 1942.

Oxford Agricultural Economics Research Institute: *Plan the Countryside*, 1945.

P.E.P.: 'Trading Estates,' Broadsheet No. 129, 1938.

J. L. Sert: 'Can our Cities Survive?' *C.I.A.M.*, 1942.

Slough Estates Ltd. and the Association for Planning and Regional Reconstruction: 'Adapting Wartime Sites to Post-war Uses,' 1944.

Sir Alker Tripp: *Road Traffic and its Control*, 1938; *Town Planning and Road Traffic*, 1942.

J. Paton Watson and Sir Patrick Abercrombie: *Plan for Plymouth*, 1943.

An indication of the immediate environment of the City is given by Fig. 44, showing the undulating plain, in which the city is situated, framed by hills and rising ground. This is an aerial photograph of the view towards the Malvern Hills, which are the most spectacular feature of the region. These hills rise abruptly to a height of 1,350 ft., though nowhere exceeding a mile in breadth, and the fine scenery of the district demonstrated in Fig. 43, together with the medicinal qualities of spring water from the hills, have established Malvern as an important health centre and inland resort.

Typical settlements and views of the Worcester plain are shown in Figs. 44–7. The City of Worcester is closely linked with its surrounding countryside, as Chap. VI relates, and helps to bridge the present discrepancies between urban and rural standards of living. These discrepancies will remain until water and electricity are more widely available, until agricultural research is generally appreciated and more heavily subsidised, and until the size and layout of farms

Figs. 44–7. *Representative Views of Worcestershire. Fig.* 44 (top left) *is an aerial view of the field pattern of the Worcester plain, looking towards the Malverns. Fig.* 45 (top right) *is Belbroughton, a village to the north of the county. Fig.* 46 (bottom left) *the old Bull Inn at Inkberrow. Fig.* 47 (bottom right) *a distant view of Pershore. The Abbey tower is seen to the left.*

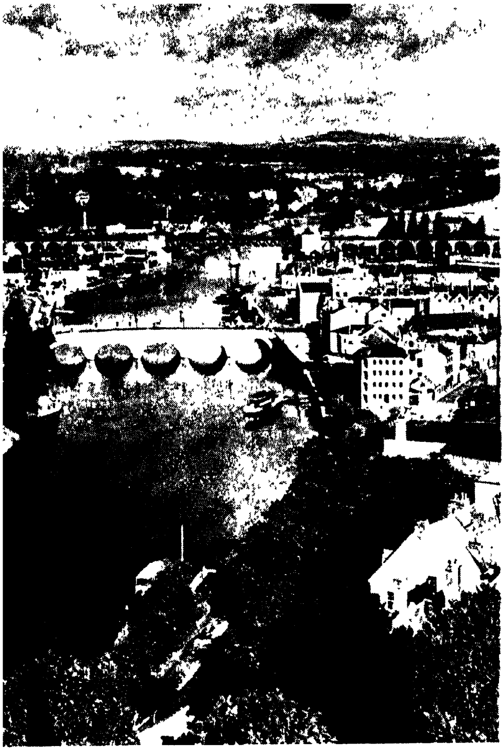


Fig. 48. *Up-river from the Cathedral Tower. The Power Station appears to the left.*

Fig. 49. *Flooding at Worcester.*

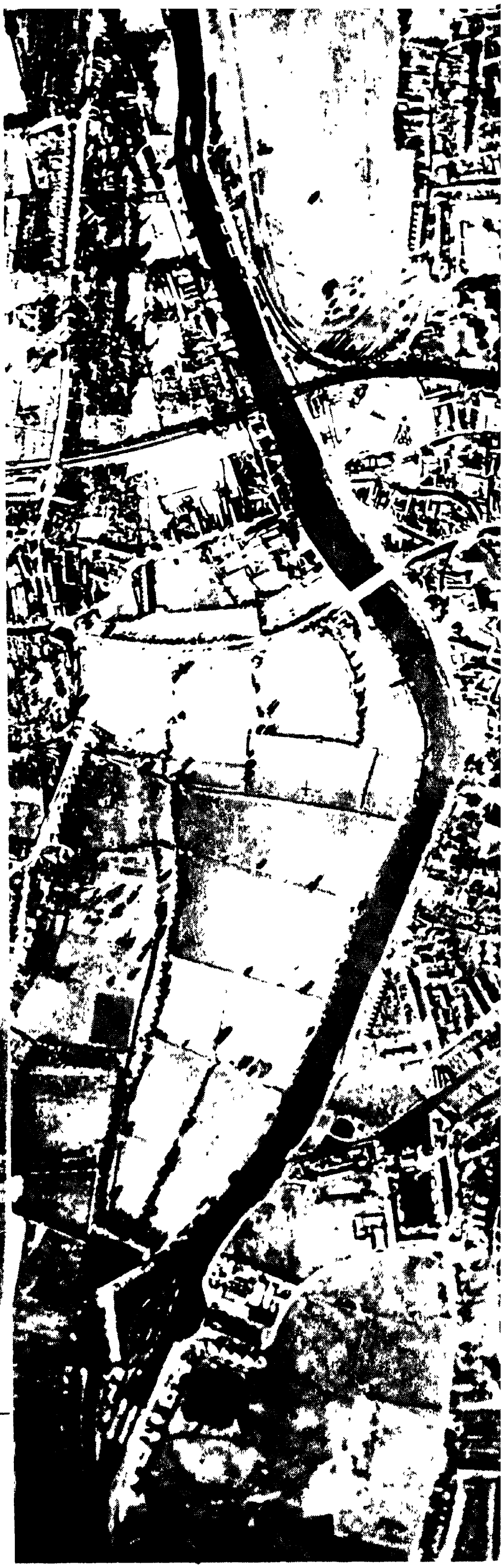


Fig. 50. *Air View of River from Diglis Lock to Pitchcroft, showing Part of the River Flood Plain. The middle portion including the two bridges corresponds to Fig*. 48.

takes account of development in mechanization and other consequences of progress in research.

The City has developed on both banks of the river Severn which divides the plain roughly in half. Though an important means of communication, the river is also, owing to lack of bridges, a serious physical barrier. Liability to flood has sterilized a large area within the City boundary from building use, and is responsible for the open character of the development pattern. Fig. 49 gives some indication of the seriousness of this flooding, which is caused by excessive rainfall in short periods. By the widening and deepening of the channel, and the provision of sluices for control purposes, the Severn Commission Development Scheme claims to secure considerable alleviation from flooding throughout the navigable section of the river.

TRANSPORT

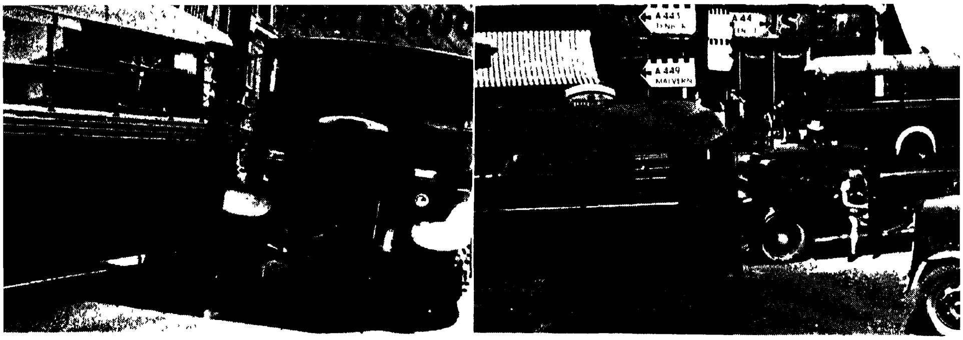
The Survey has shown that traffic reorganization begins with the planned location of the factors causing the traffic, so as to reduce its volume to a minimum.

Industry is the first factor to consider. Factories should be grouped in economically sized units adjacent to the means of transport best suited to their requirements. Dwelling areas must be located to obviate long journeys to work, and should be planned in compact conveniently sized neighbourhoods that are self-sufficient in all those services and facilities, social, cultural, and commercial, that can be effectively supported by their population. The implied concentrations of housing make possible far reaching economies in domestic delivery and collection services; and the pooling of these services to enable the maximum use to be made of the vehicles is another step in the economy of transport.

Side by side with the reduction of traffic must come improvement in the actual facilities and the co-ordination of the various forms of transport to ensure the movement of goods by the method best suited to their character. Four methods, *ROAD*, *RAIL*, *WATER*, and *AIR* are available.

Roads

The Survey has demonstrated the inadequacy and inefficiency of the road system, typical situations on which are illustrated by Figs. 51–4. These roads were designed for animal locomotion, without anticipation of the rapid development of motor transport, and the private ownership of land and exploitation of frontages to busy streets have effectively prevented any but the most meagre and piecemeal reforms. Fig. 57 shows a revised circulation system. The basic principle is to keep direct routes and avoid lengthening journeys by very circuitous ring roads or bypasses. The City owes its being and development to a strategic site commanding main traffic routes, including the crossing over the river; and it is essential for its functioning as a market and service centre that it retains this position. The bypass is often a poor solution, and when constructed to avoid a town usually encourages the town to move towards it. It has been rightly condemned by Sir Alker Tripp, who recommends 'the proper construction of through roads passing between the built-up areas in the form of precincts, so constructed and fenced as to permit the free flow of traffic,' and on this thesis the redevelopment of the City might well be based. As far as possible existing



Figs. 51–4. *Congestion of Traffic: Typical situations on Worcester's streets. Figs.* 51 ..
approach to Worcester Bridge. Fig. 54 *shows the terminus*

roads should be retained and adapted to allow an efficient circulation system to come into being without undue waiting for property to outlive a useful life.

The economies of an efficient road system have been effectively demonstrated by the German *Autobahnen*. Crossings on these roads were eliminated by fly-overs: and distractions such as poles carrying services, advertisements, and other disturbing factors were suppressed. Special landscaping squads were responsible for the moulding of earthworks and general landscaping, designed to harmonize the road with the country through which it passed. Surfaces were finished to a high standard of accuracy, signals gave positive and graphic direction and were reduced to the lowest effective number, redundant and unimportant side roads were cut off from the motorway, and the minimum tractive resistance was obtained by easy gradients, ample curves, and super-elevation where necessary. The resultant economies have been measured in a lower fuel consumption as well as in greater speed and fewer accidents.

Rail and Waterways

In Chap. IX it is recommended that, to relieve the roads, the heaviest goods traffic be diverted to the railways and the waterways. To be efficient the latter particularly require reconstruction.

The Severn Commission has sponsored an improvement scheme of the river that would give the City considerable importance as an inland port. Fig. 56 summarizes the proposals in map form. One of their objects is that short sea trading vessels of 600 tons and specially designed craft of 800 tons shall be able to pass up river to Worcester and so allow water communication between the Midland industrial areas and British ports and the Continent. Further proposals

Fig. 55. *Transit Shed. Pumping grain from barge at Diglis docks.*

138—*the City's main artery. The signpost on Fig.* 52 *itself tells the routes—it is the* ,300 *buses per week in a street with its own traffic load.*

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of the scheme would make possible the navigation of 300-ton barges to Stourport and afford communication for 100-ton barges from Stourport to the Mersey.

Worcester is selected as one of the most convenient terminal points, since it is within easy reach of the Midland industrial area. New docks are projected and transit sheds and warehouses with modern equipment for handling cargoes. A rail connection to the Worcester–Oxford and Bristol–York lines is planned.

The work involves reconstruction of locks and bridges and provision of sluices in place of the present fixed masonry weirs in order to afford better control of the river level and to provide the necessary depth of water for vessels of 12-foot draft. Until detailed costing can be made, it is difficult to estimate the economies that may be effected by the scheme.

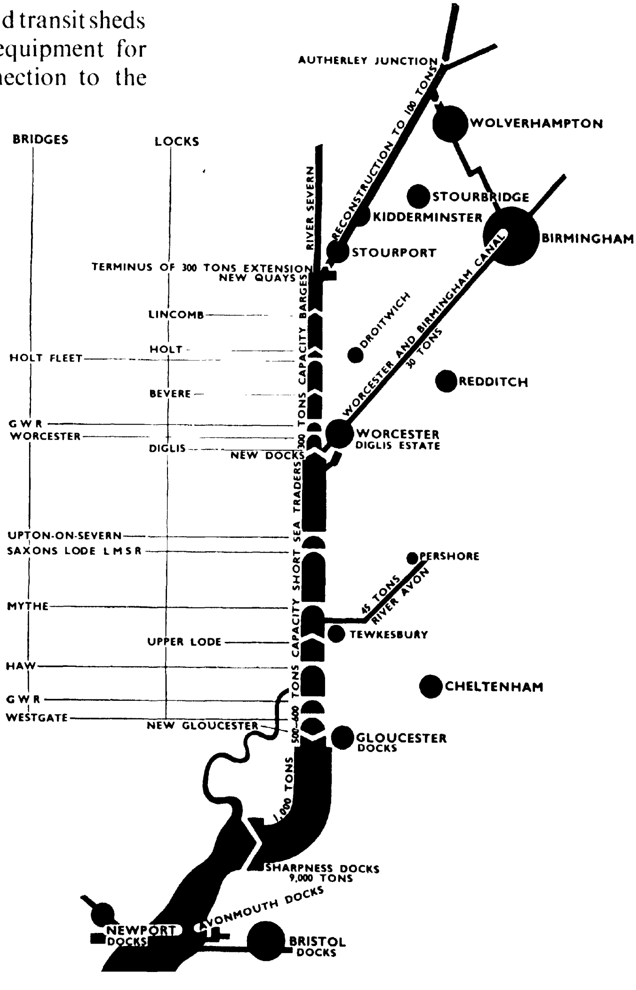


Fig. 56.
Development Plan of the Severn Commissioners.

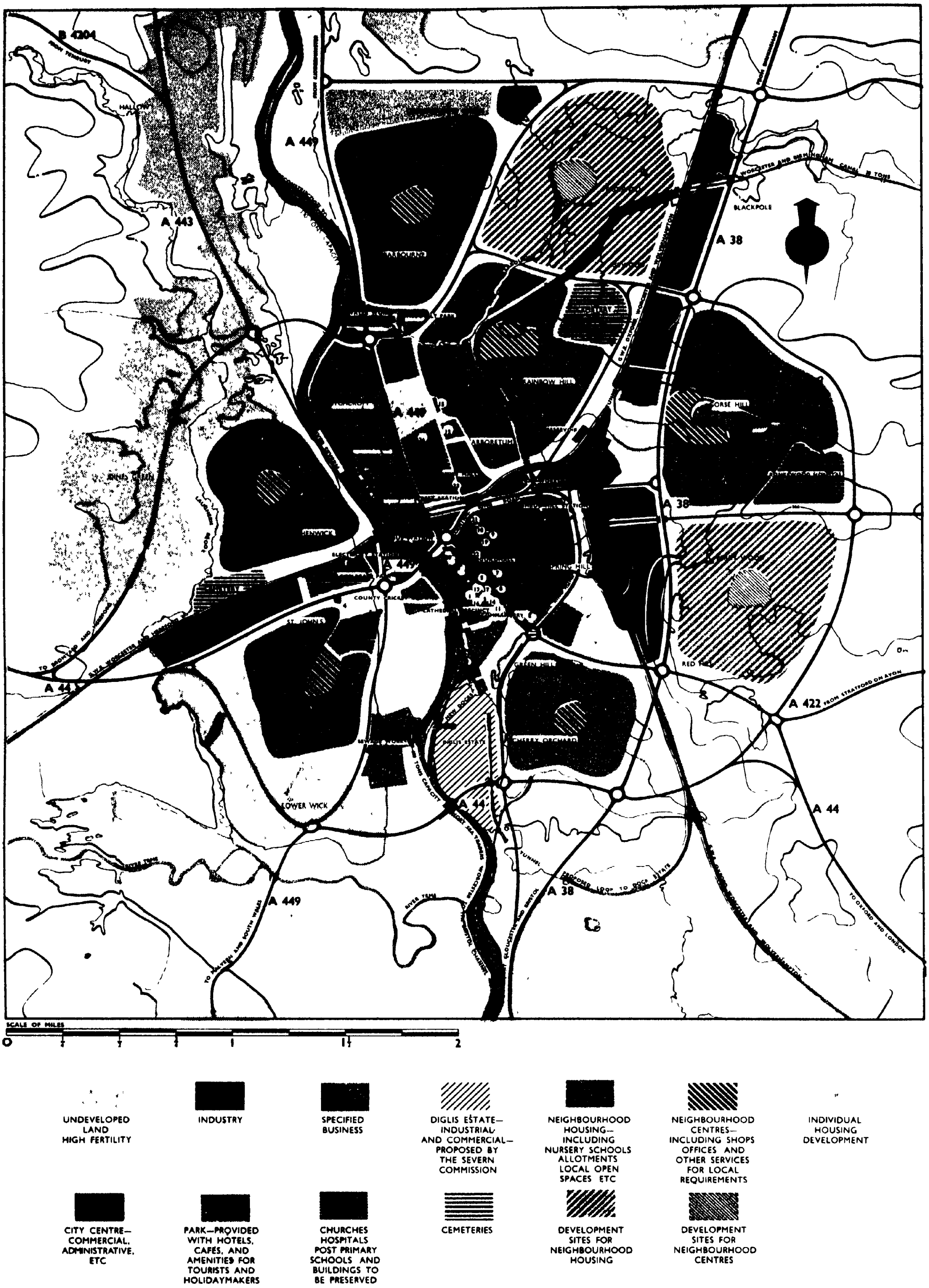

B 4204
A 449
A 443
A 38
BLACKPOLE
WORCESTER AND BIRMINGHAM CANAL
BARBOURNE
RAINBOW HILL
ARBORETUM
GORSE HILL
DINES GREEN
ST. JOHNS
COUNTY CRICKET
GREEN HILL
CHERRY ORCHARD
RED HILL
A 422 FROM STRATFORD ON AVON
A 44
LOWER WICK
A 449
A 38
TUNNEL
TO OXFORD AND LONDON
SCALE OF MILES
0
¼
½
¾
1
1½
2
UNDEVELOPED LAND HIGH FERTILITY
INDUSTRY
SPECIFIED BUSINESS
DIGLIS ESTATE—INDUSTRIAL AND COMMERCIAL—PROPOSED BY THE SEVERN COMMISSION
NEIGHBOURHOOD HOUSING—INCLUDING NURSERY SCHOOLS ALLOTMENTS LOCAL OPEN SPACES ETC
NEIGHBOURHOOD CENTRES—INCLUDING SHOPS OFFICES AND OTHER SERVICES FOR LOCAL REQUIREMENTS
INDIVIDUAL HOUSING DEVELOPMENT
CITY CENTRE—COMMERCIAL, ADMINISTRATIVE, ETC
PARK—PROVIDED WITH HOTELS, CAFES, AND AMENITIES FOR TOURISTS AND HOLIDAYMAKERS
CHURCHES HOSPITALS POST PRIMARY SCHOOLS AND BUILDINGS TO BE PRESERVED
CEMETERIES
DEVELOPMENT SITES FOR NEIGHBOURHOOD HOUSING
DEVELOPMENT SITES FOR NEIGHBOURHOOD CENTRES

FIG. 57. TRAFFIC CIRCULATION AND ZONING

BASED ON AND INCORPORATING CONDITIONS AS IN 1945

The main road system shown on this simplified map demonstrates a method by which Worcester may retain its command of the national and regional routes converging on the City and yet provide them direct and unimpeded facility. The system retains existing roads as far as possible. Access to the main routes would be limited to a few secondary or feeder roads.

Within this framework of main traffic routes a reorganized City would gradually conform. As buildings outlive their usefulness and renewal becomes an economic proposition, they should be resited in the specified zones—planned to reduce travel to a minimum and to ensure that each element of the City pattern is sited to its best advantage.

Air

The present airfield owned by the City is inadequate for all but the smallest planes, though, with possible extension, it may accommodate an air-taxi service. The siting of the field to the north-east of the City is a nuisance; because of prevailing winds (see Fig. 7) aircraft usually take off over residential areas. It should be possible to develop an existing service landing ground sited away from any major settlements but with good road facilities to the centres of population. Improvements of the road system that safely allow vehicles to use their full capacity for speed will probably give no advantage to air travel for journeys of less than a hundred miles.

ZONING

The next consideration is the zoning (within the framework of the traffic routes) of the various elements which constitute the City and are important in their use of land. Fig. 57 suggests a possible zoning plan, and each element will be dealt with individually in the order of the key.

(*a*) *Land of High Agricultural Value*

It is desirable that land of classification 'A' fertility should be saved from building and used for agricultural production. But it should be borne in mind that a county town of the size of Worcester requires a concentration of building without wide intervening gaps, to fulfil its function as an all-purpose centre.

(*b*) *Sites to be Preserved*

Worcester Archaeological Society have made a report on buildings worthy of preservation. The chief buildings are given in the list on page 295, their sites in Fig. 57. Figs. 58–64 show representative examples.

Many of these structures fulfil a useful function in their present role, but their preservation should not necessarily imply their continued use for purposes of contemporary life—subjecting their users to the limitations and inconveniences of their outmoded designs. The character of these buildings may be desirable in the case of religious institutions or public houses, but use as hospitals, schools, or dwellings should be discontinued. The aesthetic and educational value of the buildings might be emphasized by throwing them open to the public and providing an actuality in the setting often lacking in the ordinary museum with its rows of glass cases. This would proceed on the recommendations made in Chaps. IV and VIII and add to the attractions of Worcester to visitors.

(*c*) *Industry*

Some indication of the diversity of the industries of the City is given in Figs. 65–9, which illustrate representative products and factory interiors. The Survey has shown how many factories receive their raw material by rail and dispatch the finished products by road, and this points to the convenience of siting factories next to main traffic routes.

Noxious industries, liable to be a nuisance to neighbours, need siting with consideration for the prevailing wind (see Fig. 7) and neighbouring development, but increasing economy in fuel and materials may make special planning provisions less necessary.

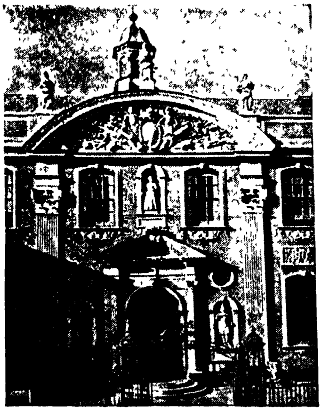


Fig. 58. Entrance to the Guildhall. Reputed one of the finest Queen Anne fronts in the country. Designed by Thomas White. Statues of Charles I and II are on either side of the door, Queen Anne above.

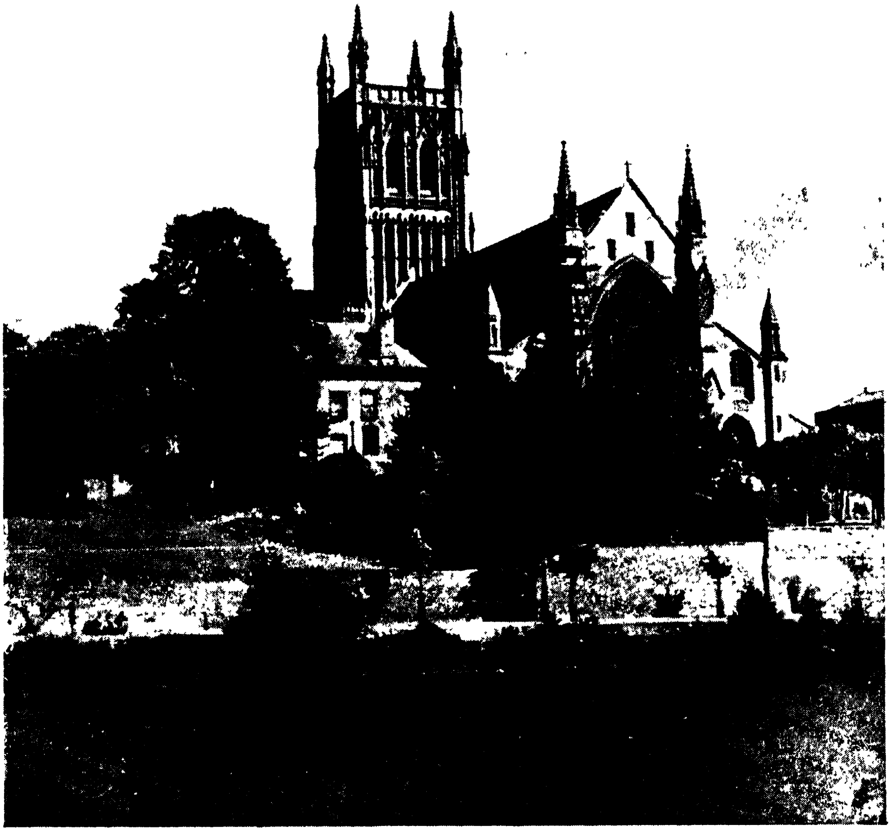


Fig. 59. Worcester Cathedral.

Fig. 60. *College Green and Edgar Tower.*

Figs. 58–64. Buildings and Streets worthy of preservation

The sites are numbered in Fig. 57 as in this list

11th–14th Century	1. The Cathedral. 2. Commandery (Monastic Buildings). 3. Edgar Tower. 4. Church of St. John.
15th Century	5. Church of St. Helen. 6. Church of St. Andrew. 7. Nash House. 8. Friar Street.
16th Century	9. Queen Elizabeth House. 10. King Charles House. 11. Entrance to Porcelain Works. 12. Cathedral Lych Gate.
17th–18th Century	13. Britannia House. 14. Sidbury Post Office. 15. Paradise Row. 16. College Precincts. 17. Edgar Street. 18. Deanery. 19. Church of St. Swithin. 20. Church of All Saints. 21. Church of St. Nicholas. 22. Guildhall. 23. Parts of Foregate Street and Tything.
19th Century	24. Britannia Square.

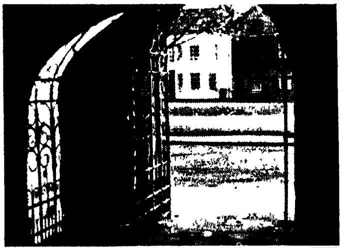
Figs. (*right*) *read down.*

Fig. 61. *From Fourteenth-century Cloisters into College Green through Norman Outer Wall.*

Fig. 62. *College Precincts.*

Fig. 63. *Friar Street.*

Fig. 64. *The Deanery, formerly the Bishop's Palace.*



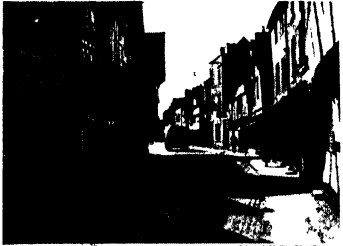


Fig. 65.
A Vista of Vinegar Vats.

Fig. 66.
Royal Worcester Porcelain.

Fig. 67.
Mining Machinery.

The grouping of factories in industrial estates offers many advantages, the most obvious being the economy of servicing a compact group of factories against that of scattered units. The estates should be planned in relation to residential areas and usually situated between two neighbourhoods, being of such size that these neighbourhoods may satisfy the estate's labour requirements and thus as far as possible lessen the need for long journeys to work.

Provision of group services is dictated by the size and character of the estate, but may include canteens, hall and committee rooms, clinic and surgical station, transformer station to enable the bulk purchase of power from the Grid, builders' and maintenance yard, and a garage and car park with a repair service and filling station. A steam-raising plant and an internal and external transport service are sometimes economic possibilities.

(*d*) *Amenity*

The development of Worcester's undoubted attractions as a tourist and holiday centre has been recommended, especially for the residence of winter

Fig.* 70. *Scatter of Factories. Factories are printed red in this view looking east from the Cathedral tower, showing High Street and Sidbury in the foreground. It demonstrates the need for planning to prevent industries damaging amenities.

Fig. 68.
Glove Factory Interior.

Fig. 69. *A Dynamometer shown testing an Aircraft Engine.*

visitors seeking relaxation and health in the district. The position of the City between Droitwich and Malvern is a factor of which full advantage should be taken. It is essential to consider catering, hotel, and amusement facilities as a major industry, and expenditure on the general amenity of the City particularly its centre (e.g. Fig. 71) as investment that will return tangible profits.

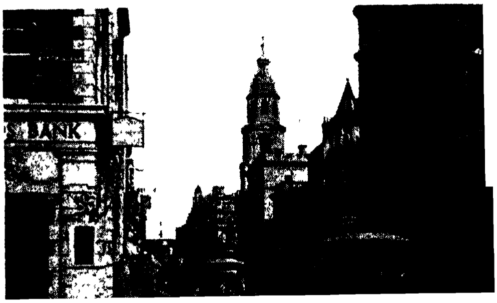
Worcester has the advantage of a fine natural site with the magnificent background of the Malvern hills. Unplanned development, however, has ignored the inherent possibilities and has produced a state of affairs as evidenced in Figs. 73–5. The riverside industry shown in Fig. 73 should be relocated in the specific zones to which reference has been made, and the whole river front might possibly be landscaped as a single park strip. Included in this river park should be an hotel sited to take advantage of the view towards the Malverns shown in Fig. 72, licensed café, restaurant, dance and concert hall, and other assembly rooms.

Other opportunities to improve the amenity of the City are presented by the Worcester–Birmingham canal, which with paved walks and gardens would prove an attractive asset. The fine heritage of old buildings is often offended by their surroundings. Advertisements need encouraging to more appropriate places. The whole process of renewal should work to the end of producing order from the present chaos resulting from the individual disregarding the community at large. The design of all new works, from public buildings to street conveniences, should be governed by the high standard of aesthetics resulting from regard to working efficiency and economy of method.

(*e*) *Housing*

A tragedy of housing of the past is the fact that the house itself was considered the unit of development and that its relation to other dwellings, and the

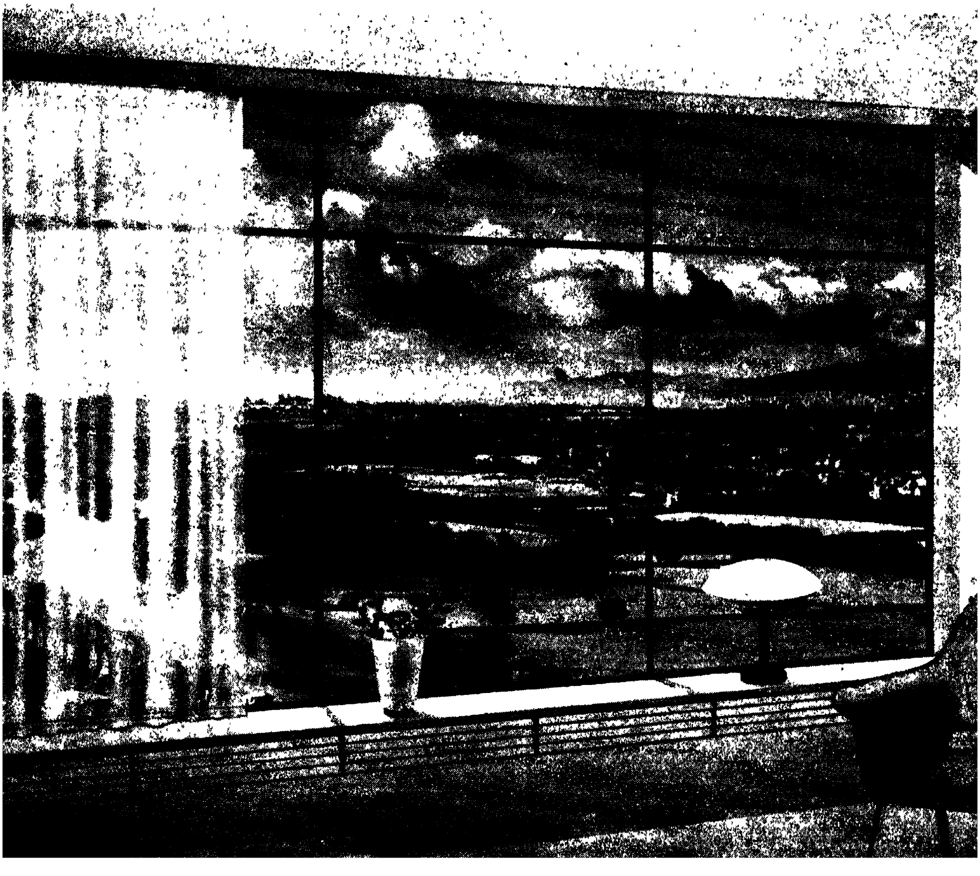
Fig. 71. *The Cross. The wider part of the main artery at a quiet period. The tower of St. Nicholas Church gives character and 'amenity' to the shopping centre.*



expression of a local character, were for the most part left to chance. Representative examples of actual houses in Worcester are given in Figs. 76–80. It is a principle now widely accepted that the complete life and activities of the inhabitants must be considered when siting dwellings. They should be grouped in neighbourhoods sufficiently large to provide the wide diversity of relationships necessary for society to flourish, but not so large that the local importance of the individual is lost. The size sufficient for the effective economic organization of the desirable community buildings and facilities has been estimated to consist of between 7,000 and 10,000 persons. Community buildings should, wherever possible, be grouped to form a natural focal point for the neighbourhood and sited within easy distance of all dwellings.

The amount of land allotted to housing depends on the density of population that is locally acceptable. The high densities of central city slum areas have caused during the last thirty years a reaction in the favour of low-density development of mainly detached and semi-detached houses. This diffusion means that the community has to maintain a large surface of streets and roads, sewer and water systems, street lighting, and other public works for a disproportionate number of inhabitants, and it increases distances to shops, schools,

Fig. 72. A Room with a View. The Malverns as they would appear from a riverside hotel on the site of the factories in Fig 73.



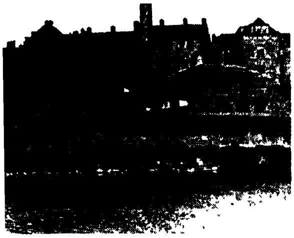


Fig. 73

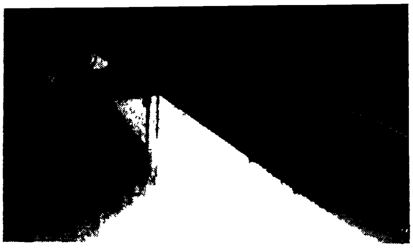


Fig. 74

Fig. 75

Figs. 73–5. *Amenity!*
Fig. 73. *Factories fronting the river near the Cathedral. Fig.* 74. *A ramped access to the canal at Lowesmoor Wharf, flanked by buildings, dingy and poster-scarred. Fig.* 75. *A shabby vista next the river in St. John's.*

and factories and discourages the development of community feeling. It has resulted in the spreading of houses over valuable agricultural land, and while trying to be both town and country, often achieves only the disadvantages of both. To provide services and amenities on an economical basis it is essential to concentrate populations, and wherever possible encourage vertical rather than horizontal development.

The standards and principles that should govern the planning of a neighbourhood are as follows:

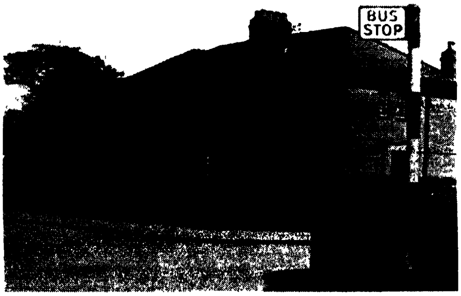
(i) The neighbourhood has been isolated from the disruptive effect of through traffic and sited between main arteries.

(ii) Detached, semi-detached, and single-floor dwellings have been considered unduly wasteful of land and services.

The plan suggested in Fig. 81 provides families of growing children with individual gardens, by means of dwellings in two- and three-storey terraces (Figs. 82–4). The three-storey houses are more expensive, but allow the provision of garage and covered play yard, and solve the difficulty of front to back access. The flat block illustrated (Fig. 82) provides satisfactory accommodation for other types of family—single persons, couples without children, adult families, invalids, and that growing class (see Chaps. III and VIII), the old, who should be given the opportunity of living on the ground floor, and provided with small private gardens. Privacy and quiet are prerequisites governing the design of dwellings, and flats should be provided with direct lift access in pairs and should be insulated against the transmission of sound and vibrations through structural members.

(iii) Dwellings are oriented to allow the maximum penetration of sunlight. The British Standards Code of Practice Committee in their draft report on sunlighting of buildings make the following recommendations for dwellings:

> One window of not less than 10 sq. ft. area be provided in the principal living-room, so placed that sunlight can enter for at least one hour towards the end of the useful sun-day in midwinter; and other circumstances permitting, provision also be made for sunlight to enter the kitchen at the beginning of the useful sun-day in midwinter. This means that the living-room window must be oriented between south-south-east and west-north-west (this allowing for normal depth of reveal). Obstructions lying south-westward of the window concerned should subtend vertical angles of less than 10 degrees and preferably not more than 5 degrees throughout a horizontal angle of 15 degrees, representing roughly one hour of sunlight. In order to ensure good sunlighting in the late autumn and early spring, obstruction lying south-west to west of the affected window should generally subtend vertical angles of less than 20 degrees.



(iv) Housing is sited to front on one side only of roadways and road surface is reduced to a minimum.

Where possible houses are served by light pedestrian ways, running at right angles from the service roads, on which garages are grouped at convenient points. The resultant density of this type of development makes district heating and hot-water supply an economical proposition. The 'Report on the Severn Barrage Scheme' (H.M.S.O., 1945) asserts the feasibility of using energy from the barrage for this purpose for towns within a fifty-mile radius, which would include Worcester. Many other factors encourage the adoption of this form of heating, principally on account of the rising price of coal and associated transport and distribution costs.

(v) As far as the exigencies of site allow, a natural focal point for the neighbourhood is provided by the shopping centre.

(*f*) *The Neighbourhood Centre*

Size and facilities of the neighbourhood centre are relative to the distance and accessibility from the city centre. The farther and less accessible, the larger should be the neighbourhood provision. In cities with an area similar to Worcester, distance can never be great; but Fig. 57 suggests neighbourhood centres rather more widely spaced than the existing centres, or nuclei of centres, discussed in Chap. XI. These sites of the suggested new centres are chosen

Figs. 76–80. *Existing Houses* (*left*) *read down.*

Fig. 76. *Backs of Recent Housing near Gorse Hill.*

Fig. 77. *A Children's Playground in St. John's behind Drab Housing of Type* 1 (*see page* 146).

Fig. 78. *Hebb Street* (*housing of Type* 3).

Fig. 79. *Recent House Fronts in St. John's.*

Fig. 80. *House in Britannia Square.*

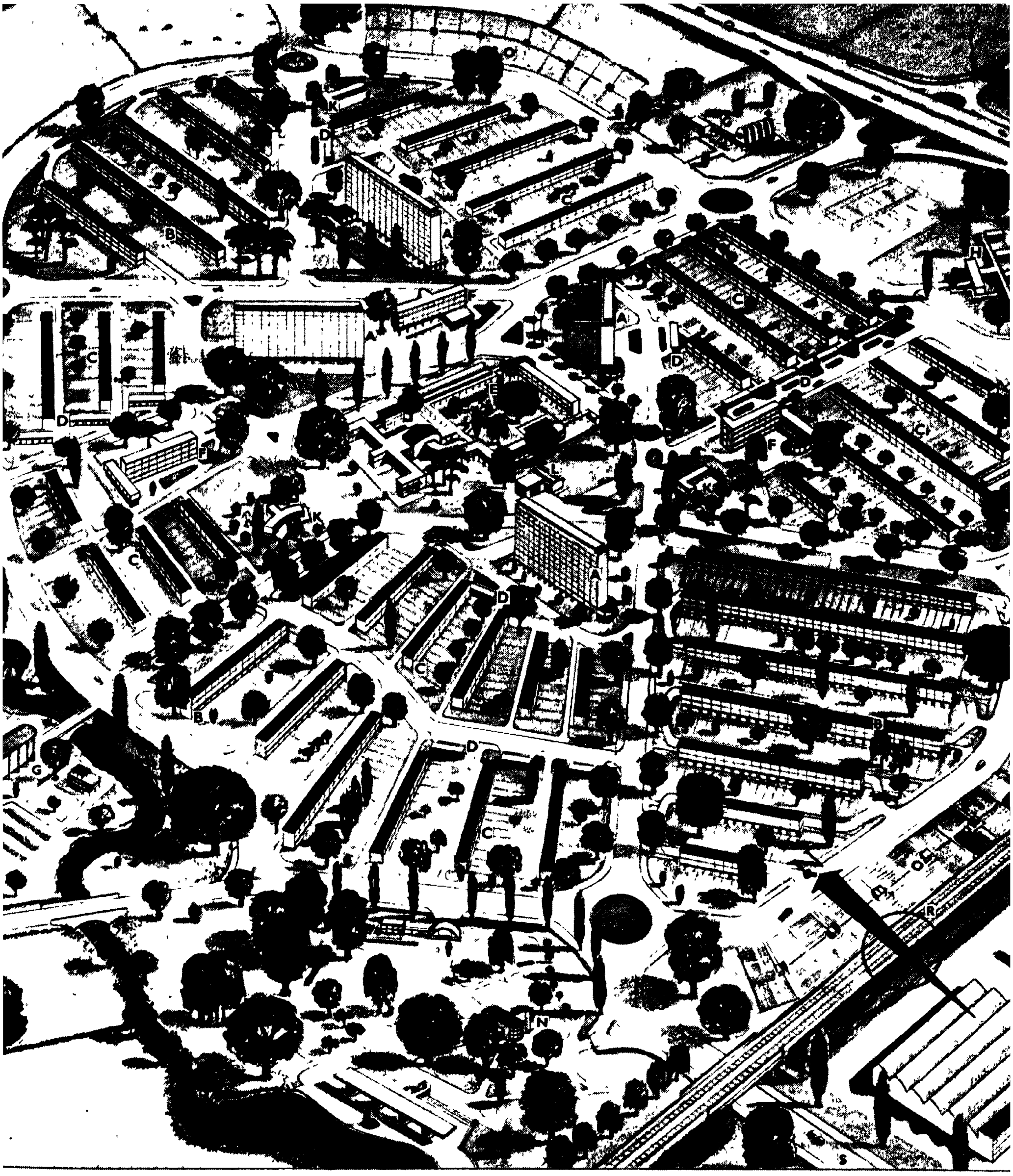


Fig. 81. *Plan for a whole Neighbourhood. Control of land and planning by a single directive is necessary to achieve the comprehensive scheme illustrated. An urban pattern seeking to relate the city dweller to natural conditions by the use of comparatively high densities of population in small units. This is a neighbourhood of some seven thousand inhabitants, half of whom are members of families with growing children and live in terrace dwellings (see Figs.* 83–4) *with private gardens.*

KEY TO FIG. 81. A, B, C, E, N, O are detailed in Figs. 82, 83, 84, 86, 99, 94.

. Flats with lift-access direct in pairs.
. Terraces of three-storey houses.
. Terraces of two-storey houses.
. Groups of Garages for two-storey houses.
. Neighbourhood Centre including main Primary School.
. Low Rental Flats with stair-access (for young people).
. Places of Worship.

K. Nursery Schools.
L. Neighbourhood Heat Station.
M. Recreation Grounds (to right of plan at D).
N. City Crematorium and Memorial Garden.
O. Allotments.
P. Industrial Estate.
Q. Main Arterial Road.
R. Railway.

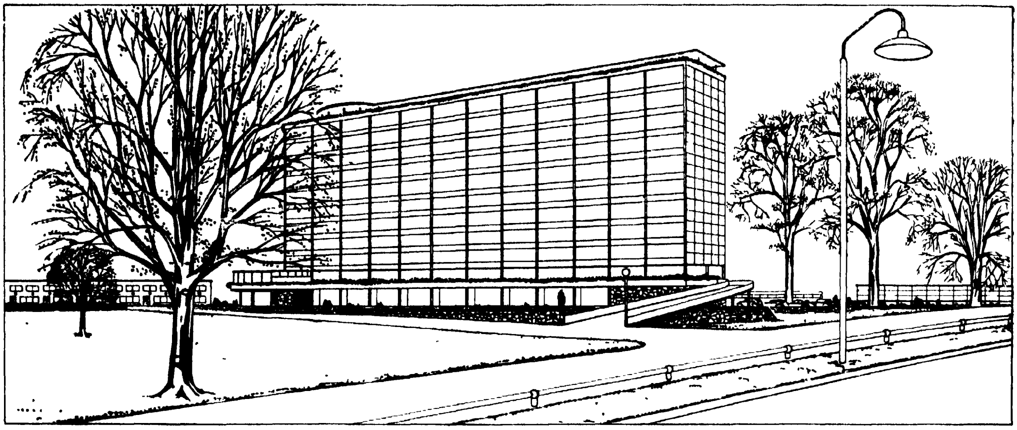


Fig. 82. *Apartments* (*with lifts*) *meet the needs of young people without children, all-adult families, and* (*on the ground floor*) *the aged.*

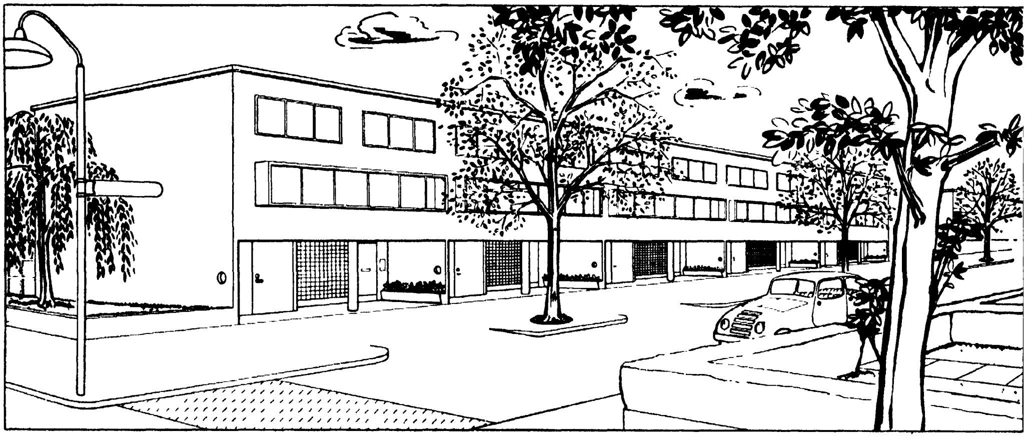


Fig. 83. *A terrace of three-storey houses incorporating a garage on the ground floor.*

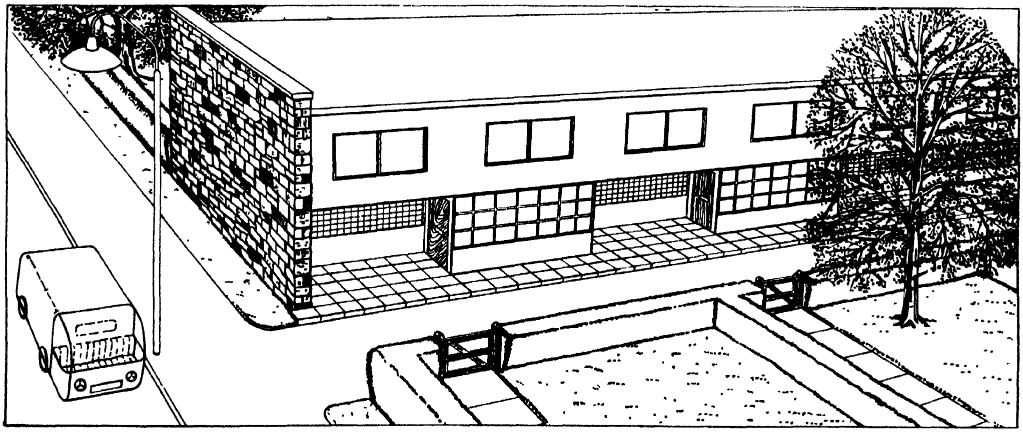


Fig. 84. *Two-storey houses within the range of the lowest income groups. Garages for those who want them would be grouped close by.*

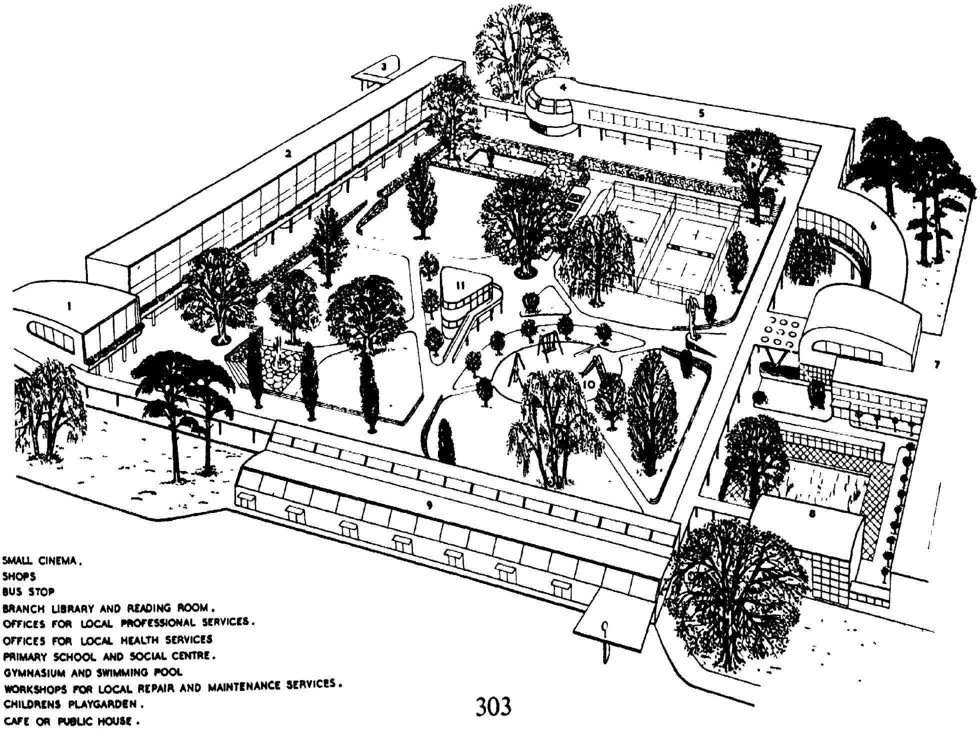
to give minimum distance from the existing housing developments, or to seize the opportunity within the neighbourhood area of a fine natural site with wide views, such as at Gorse Hill. The typical neighbourhood centre, as in Fig. 86, should include the facilities listed in Table II of Chap. XI. The main primary school may form part of a community or social centre, and the maximum open space should be obtained by the pooling of recreation and playgrounds, etc., to form a central park.

Fig. 85. *Typical General Shop (continually referred to in Chap. IX).*

(*g*) *Individual Development*

Certain areas are prescribed for development by persons who do not desire to take advantage of the grouped (though more economical) facilities and standards of the neighbourhoods. These areas, though governed by the normal safety and health regulations affecting road design, sanitation, etc., should otherwise be free from planning restrictions.

Fig. 86. *Possible Neighbourhood Centre. This drawing is a detail of the centre shown in the perspective of the neighbourhood (Fig.* 81) *and carries out recommendations in Chaps. VIII, IX and X. Shops, offices, and social and cultural facilities in the form of a precinct integrate the life of the neighbourhood.*



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11
SMALL CINEMA.
SHOPS
BUS STOP
BRANCH LIBRARY AND READING ROOM.
OFFICES FOR LOCAL PROFESSIONAL SERVICES.
OFFICES FOR LOCAL HEALTH SERVICES
PRIMARY SCHOOL AND SOCIAL CENTRE.
GYMNASIUM AND SWIMMING POOL
WORKSHOPS FOR LOCAL REPAIR AND MAINTENANCE SERVICES.
CHILDRENS PLAYGARDEN.
CAFE OR PUBLIC HOUSE.

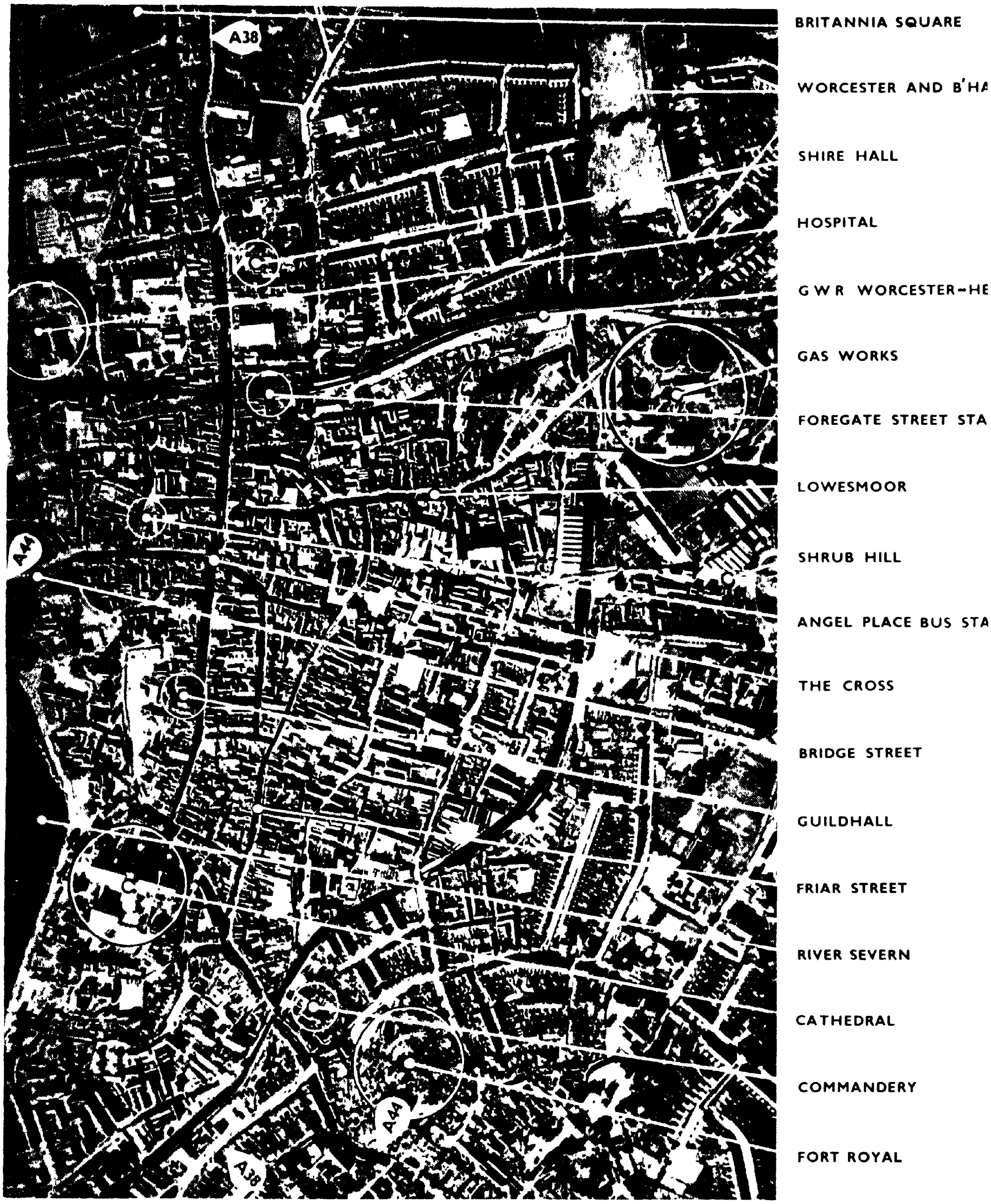


Fig. 87. Air View of the City Centre. This continues the view in Fig. 50 eastward. The main north–south artery (A38) is clearly visible. Points mentioned in the text are indicated and the figure brings reality to the central area, only mapped in other figures. The large area of high density housing (compare Fig. 27) appears north of the G.W.R. line and west of the canal.

(*h*) *City Centre*

The present centre, shown from the air in Fig. 87, serves the several neighbourhoods forming the City and is also the focal point of the wide area of countryside that has been called the area of influence of the City. The existing problem

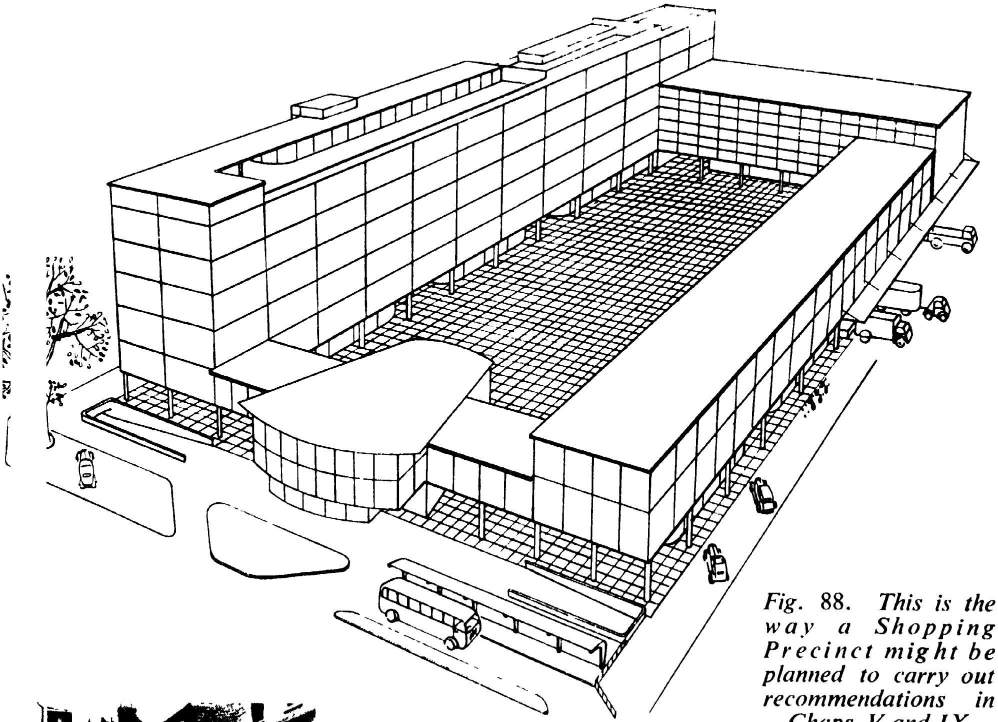


Fig. 88. *This is the way a Shopping Precinct might be planned to carry out recommendations in Chaps. V and IX.*

is essentially one of reconciling the concentrated day-time 'concourse' for business and shopping, and the evening concourse for social functions with efficient and safe circulation. Figs. 89–91 show some of the shopping concourse under the existing dispensation. As a solution Fig. 57 shows the inner ring road defining the central area and making it unnecessary for traffic not having business in the area to enter it. Within the area, the process of renewal should be directed to the grouping of all buildings, commercial or administrative, in the form of precincts that allow the free circulation of traffic around them and safety for the pedestrian within. Fig. 88 demonstrates this principle applied to a shopping centre. Here the buildings forming the precinct are varied in height to allow sunlight to penetrate for the greater part of the sun-day and to prevent excessive area of shadow over the pedestrian walks. Loading bays are provided at the rear of the buildings. The ground floor is left partially free to allow instant access from car or cycle park to shop, and opportunities for display to attract the passing motorist are presented by the frontages to roadways. Pedestrians can cross the service roads to adjoining precincts by means of subways. Major economies in land should also result from the zoning

Figs. 89–91. *Shopping without Precincts in the Central Area.*

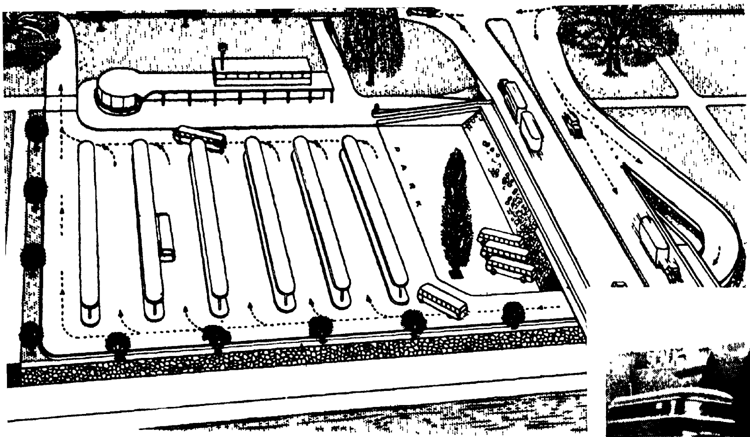


Fig. 93. *Possible Bus Station to meet recommendation in Chap. V.*

Fig. 92. *Existing Bus Station.*

of shops and commercial buildings in the centre, according to height. The factors governing this are the character of the business, the number of customers or clients, and the proximity of other buildings that may suffer through obstruction of light.

(*i*) *Rail and Omnibus Stations*

Ideally, bus and railway stations should be combined, but Worcester, with two rail stations, neither of which is suitably located for a bus terminus, presents a difficulty. The joining of the stations by the central ring road shown in the zoning map (Fig. 57) is a possible solution to the problem.

The design of rail stations has recently much improved, and the existing stations of Worcester will doubtless eventually receive the necessary attention. Fig. 92 shows the existing bus station located, it will be noticed, in a traffic street, and Fig. 93 shows an illustration of its possible replanning on a site convenient to all routes adjoining the central bridge. The bus company estimates that accommodation is required for 1,300 buses per week, together with a café, cloak, and rest rooms. A municipal information bureau should be a useful provision.

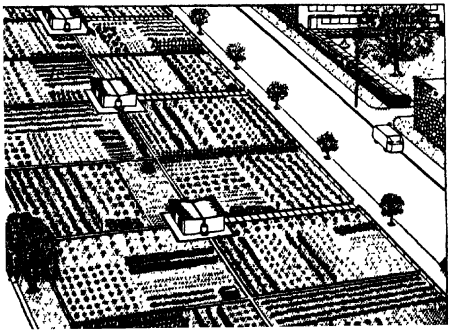


Fig. 94. *Design for Allotments. These allotments fringe the neighbourhood and help to insulate houses from a main road. The standard tool and store sheds are grouped in fours to effect structural economies and may be erected by the tenants themselves. The sloping roofs facilitate the collection of rain-water for use in dry periods.*

(*j*) *Schools*

Existing schools in Worcester are shown in Figs. 95–7. Access is of the first importance for young children, and it should not be necessary for them to go far for school until they are 11. The location of schools should be so ordered as to present an ever-widening horizon—the nursery, intimate in character; the primary school, a little more formal, either 'dispersed' or in the neighbourhood centre; the secondary school at the neighbourhood centre or perhaps, to allow room for playing-fields, between two neighbourhoods; and finally the technical and specialist schools in the City centre, having more of the air of places of business, designed to condition the pupil to the office or factory in which he will eventually be occupied.

(*k*) *Allotments*

Allotments should be provided within easy reach of all dwellings, and as far as possible should be located alongside the main roads, railways, and factory estates to supplement the open space insulating residential areas and defining the neighbourhoods. The untidy appearance of many existing allotments can be remedied by encouraging the laying of paths and the construction of standard tool and storage sheds that could be placed conveniently to serve every four allotments. This might be achieved by the provision of standardised units of pre-cast concrete or timber, erection being the responsibility of the tenant. Fig. 94 shows how these might appear.

(*l*) *Cemeteries*

In Chap. VIII it was estimated that cremation saves both land and personal expenditure on funeral costs. A possible development for those who desire earth burials might be the use of cemeteries as memorial gardens in which the present

---

Fig. 95 (*left*). *Christopher Whitehead School.*

Fig. 96 (*above left*). *Stanley Road School.*

Fig. 97 (*above right*). *St. John's Church School.*

Fig. 98. *Gravestones at Astwood Cemetery.*

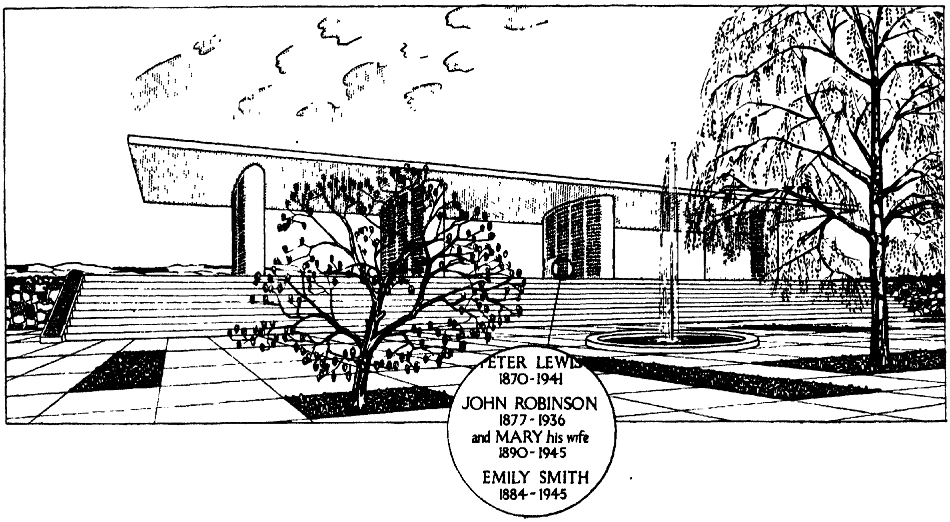
chaos of individual stones (see Fig. 98) is discouraged in favour of grouped memorials as shown in Fig. 99, where the names and particulars of the deceased are carved on large stones in the form of walls supporting a flat roof. The lettering is largely protected from weathering, and thus also provides a more permanent means of assisting memory.

ADMINISTRATION

In reporting to the City Council the Survey recommended that data obtained by and passing through the various departments of the City should be correlated by a central statistical bureau and used to make an up-to-date record of the City's life. Similarly the master plan governing development must be continually revised in the light of the new information and the constantly evolving standards of practice.

Town planning is, essentially, applied social economics, and inducement should be offered for economists and sociologists to enter local government service in the capacity of planners to collect information from, advise, and possibly co-ordinate the various departments. A prime function of the planners should be to assess public expenditure in the light of its social benefit. They should also be concerned with the productive and service capacity of the area, represented by the opportunities for industrial employment, the efficiency of retail distribution and the social services, and indeed all the elements of civic life discussed in this Survey.

Fig. 99. *Possible Treatment of Cemetery or Crematorium. Perhaps a more fitting means than Fig.* 98 *for perpetuating memories. Here the individual records are placed on the pillars of a grouped memorial which may be pleasantly environed by fountains and gardens.*



APPENDIX I

THE SAMPLE HOUSE-TO-HOUSE INQUIRY

A SAMPLE house-to-house inquiry was undertaken as a necessary part of the Survey in order to acquire information relating to local requirements and habits, to supplement data obtained from official sources, and to secure views representative of public opinion within the City. The answers obtained are given in the appropriate chapters. They have been used in forming conclusions throughout the Survey.

It was calculated that the selection of approximately one house in fifteen, providing a sample of 900 houses, would be sufficiently representative. This sample has, in fact, proved satisfactory, and its validity was in many cases tested by checking against official statistics.

The inquiry, carried out during the summer months of 1944, covered every street within the City with the exception of the main shopping streets. The number of residential premises within these shopping streets is approximately 450, equivalent to thirty house visits.

Private houses only were counted; every fifteenth house was visited, irrespective of size or district.* To obtain the fifteenth house, after the first originally visited, the investigators counted fifteen up the street. If there were, say, eight houses left over from one street, the number was carried forward and the seventh house in the next street would be visited; if one had been left over, the fourteenth house in the subsequent street would have been taken, etc. If there was no one at home at the fifteenth, then the sixteenth house was visited, and failing a response there, the fourteenth, and so forth.

In the majority of cases the housewife was the person interviewed, but a certain number of visits were made at evenings and week-ends to enable a greater number of men, and other persons habitually absent during the daytime, an opportunity of answering the questions. Altogether seven investigators took part in the inquiry, the majority of the work being carried out by four of them. In order to obtain a standard form of approach and standardized answers, investigators were provided with a schedule of questions for each house which they themselves filled up in the course of the visit.

The points covered by the schedule were as follows:

A. *Address.* Name of road and number of house in road (to facilitate classification). Names of persons interviewed were not asked.

Family Composition. Distinction made between different families living in the same house, and also between the permanent and temporary residents.

Number of Rooms. All habitable rooms included.

Husband's Occupation. The type of occupation and status therein.

B. *Facilities for Children*

1. *Clinics.* For maternity and child welfare.
2. *Crèche.* Provision for children of 6 months to 2–3 years.
3. *Nursery School.* Here taken to include any establishment catering for children aged from 2–3 years to 5 years.
4. *Children's Playgrounds.* Authorized playgrounds, sports fields, and parks available to children out of school hours.

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*To allow for houses in shopping streets and institutions not covered, the sample may for most purposes be taken to represent one-sixteenth of the population of the whole City.

The questions asked about each type of facility were:
(i) If used,
(ii) Distance of nearest,
(iii) Distance within which one might be used if available,
(iv) Suggestions as to suitable new sites.

C. *Travel to Work*
1. Type of work, e.g. outwork, factory, domestic,
2. Distance of travel,
3. Method of travel,
4. Cost of travel.

D. *Leisure-time Activities*. Questions, where applicable, related to (*a*) extent of use, (*b*) situation of the nearest, and (*c*) method of travel, to the following:

1. Library
2. Evening class
3. Youth clubs
4. Men's clubs
5. Women's clubs
6. Place of worship
7. Parks
8. Sports grounds
9. Baths
10. Cinema
11. Public house
12. Dance hall
13. School meals
14. Industrial canteens
15. Cafés, etc.

E. *Shopping*. Householders were questioned on the frequency of their visits to:
1. The local shopping centre,
2. The central shopping area,
3. Other towns for shopping purposes.

They were asked to state the type of shop preferred and the reasons for their preferences.

F. *Housing*. Questions were as follows:
1. Do you want to move to another house?
2. If so, to accommodate:
    (*a*) Whole household,
    (*b*) Part of household.
3. If so, give:
    (*a*) Type of house required,
    (*b*) Number of rooms,
    (*c*) Whether to be rented, if so rent level,
    (*d*) Whether to be purchased, if so, purchase price.
4. Have you a preference for any particular district?
5. Which neighbourhood amenities are most desired?
6. Is there a maximum distance from the City centre beyond which you would not choose to live?

Comments and criticisms of existing facilities, etc., were invited on all sections of the questionnaire.

The response to the questionnaire was good. There were only very few people who refused to co-operate, though often those who were interviewed did not wish to be identified with their answers. In many cases the display of interest was accompanied by a certain scepticism; the question was often asked, 'But is anything going to be done about it?'

APPENDIX II

QUESTIONNAIRE CIRCULATED WITH ELECTRICITY ACCOUNTS, AND SUMMARY OF ANSWERS

Of approximately 15,000 houses, some 12,000 are supplied with electricity. A short questionnaire (copy given below) was circulated to these 12,000 houses with the electricity accounts mid-year, 1944.

QUESTIONNAIRE

	ANSWERS
Question 1	(*Place a* X *against the one you prefer.*)
Would you rather live in the centre of Worcester and have a flat or house with no garden; but near main shops, cinema, and other places of entertainment?	....
OR	
Would you rather live further out in the suburbs and have a house or bungalow with garden, good bus service to main shops and cinema, etc., more healthy surroundings, and safer roads for children?	....
OR	
Do you not mind?	....
Question 2	(*Place in order of importance to you.*)
Which of the following do you think is most needed in the City? (*a*) Concert Hall, (*b*) City Orchestra, (*c*) Municipal Theatre, (*d*) Swimming-baths, (*e*) Skating-rink	1...................... 2...................... 3...................... 4...................... 5......................
Question 3	(*Place a* X *against the one which applies.*)
Do you prefer to live near enough to your work so as to be able to get home for a midday meal?	Yes .... No .... Do not mind............
Question 4	
How many persons reside at your house (including those away from home with H.M. Forces or on National Service)?	....
Question 5	
Can you say how many of those mentioned in No. 4 do NOT intend to remain in Worcester after the war?	....

Please give the name of your road...

This questionnaire was either wholly or partially completed by 2,038 householders. In the great majority of these cases each of the five questions was answered. Since this response represents only about 17% of the possible answers, results can only be taken as indicating the preferences of those sufficiently keen to answer.

Question 1. 92% of the forms returned expressed a preference for a house in the suburbs, while only 3% showed a preference for living in the centre. Of the answers coming from the older and central districts, 87% reveal a preference for moving outwards, while answers from the estates built since the last war showed that between only 1% and 2% of the residents there wished to move nearer the centre.

Question 2. The answers to this question indicate a definite interest in the possibility of providing swimming-baths and a municipal theatre. About the same number of people wanted each of these: together they formed over 80% of all first choices of those answering. Most of the others favoured a concert hall; there was little response to the other two suggestions.

Analysis of second and subsequent choices confirms the validity of the order of preferences given above.

Question 3. The answers to this question show an appreciable desire among earners to live near enough to their place of work to be able to get home for their midday meal. Two-thirds of all answers were in the affirmative.

Questions 4 *and* 5. Of 8,000 persons living in the houses from which answers were received (including persons temporarily away, e.g. on service), 16% were stated to be unlikely to remain in Worcester after the war. This does not, of course, imply that the 1944 population will drop to this extent. Apart from the uncertainty about the general applicability of the answers, the places of those leaving Worcester will be taken by those returned from war service, and some of those who stated their intention of leaving may not be able to find accommodation elsewhere.

APPENDIX III

QUESTIONNAIRE CIRCULATED TO WOMEN'S INSTITUTES AND PARISH COUNCILS

A QUESTIONNAIRE was circulated to the Women's Institutes and Parish Councils of the central and south districts of Worcestershire, primarily to assist in determining the extent of Worcester's influence as an absorbent of labour and as a centre for marketing, distribution, specialized health and professional services, educational and recreational facilities.

The questions asked fell mainly under the following headings:

A. *Education*

The demand for nursery schools.

The suitability of the type of education received, having regard to outlets for the employment of juveniles.

Centres advocated as suitable for the establishment of secondary schools and county colleges.

The demand for facilities for adult education.

The provision and use of library facilities.

B. *Recreational Facilities*

The name, membership, activities, frequency, and place of meetings of the various voluntary organizations within the vicinity catering for leisure-time activity.

The extent of use of facilities outside the vicinity for clubs, sport, library, cinema, dancing, etc.: the places visited for these purposes and the method of travel to them.

C. *Transport*

The adequacy or otherwise of transport services in the area for purposes of work, school, recreation and entertainment, shopping, etc.

D. *Employment*

To what extent opportunities exist for suitable work in the district for men, boys, women, and girls.

The degree to which people leave the district to find work elsewhere; and the approximate number of people from each district travelling daily to work in Worcester.

The extent of seasonal employment; and whether the introduction of light industries within the district, particularly to provide employment in winter months, would be appreciated.

E. *Housing*

Housing needs of the area, with special reference to the number and type of new dwellings required, whether to be rented or purchased, the provision of or need for electricity, gas, piped water supply, sewage-disposal facilities.

The answers were most helpful in Chap. VI for examining the linkage between the City and its surrounding countryside. The results obtained support the demarcation of the 'area of Worcester's influence' arrived at in Chap. I and present a general picture of the relative importance of Worcester and of other towns as centres for work, shopping, and recreation. These results are illustrated diagrammatically in Fig. 23. Other details obtained relating to education, employment, housing, and transport facilities have been valuable in the Survey by enabling conclusions drawn from statistical or other sources to be supplemented by information based on local knowledge.

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